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MEDICAL SOCIETY OF LONDON

AN ATTEMPT Towards a Natural Hiſtory OF THE FOSSILS of ENGLAND;

IN

A CATALOGUE of the *Engliſh* FOSSILS
in the COLLECTION of

J. WOODWARD, M. D.

Containing

A DESCRIPTION and HISTORICAL ACCOUNT
of each; with Obſervations and Experiments,
made in order to diſcover, as well the Origin
and Nature of them, as their Medicinal, Mechanical, and other Uſes.

PART I.

Of the FOSSILS that are real and natural:
Earths, *Stone*, *Marble*, *Talcs*, *Coralloids*, *Spars*,
Cryſtals, *Gemms*, *Bitumens*, *Salts*, *Marcaſites*,
Minerals, and *Metals*.

TOME I.

LONDON:
Printed for F. FAYRAM, at the *Royal Exchange*; J. SENEX, in
Fleet-ſtreet; and J. OSBORN and T. LONGMAN, in *Pater-
noſter-Row*. M.DCC.XXIX.

THE

Publiſher to the Reader.

DR. WOODWARD has been ſo full in his *Prefaces* to theſe *Catalogues*, and in his *Diſſertations* on the ſeveral Parts thereof, that he has made it in a manner needleſs to ſay any thing more about them.

It may be, however, proper to obſerve, that the *Catalogue* of the *firſt Tome* of the *Engliſh Foſſils*, in the Cabinets A and B, contains an Account of ſuch as the *Doctor* bequeathed by his *Will* to the Univerſity of *Cambridge*; and that the *Engliſh Foſſils* in the Cabinet C, and the *Foreign* ones in the Cabinet D, deſcribed in the *ſecond Tome* of the *Catalogue*, are thoſe which He has ordered to be diſpoſed of, and are now to be ſold.

Both theſe *Collections* are not only extremely choice and curious, but (what is more ſurprizing) are *compleat* in their kind. They contain each of them a great Variety of all ſorts of *Foſſils*; eſpecially the Latter, which the *Doctor* procured from all the known Parts of the Globe, with a Trouble and Expence more than ſufficient to diſcourage any other body from attempting a Work in which he ſo happily ſucceeded. He ſucceeded indeed, but it was not without having carried it on for a Courſe of near forty Years, with a Paſſion for the Improvement of Natural Knowledge in general, and with a particular View to evince the Univerſality of the Deluge; which *they* prove, indeed, by ocular Demonſtration.

A Collection of *Engliſh Foſſils*, if a Man uſes a proper Diligence, and will not ſcruple the neceſſary Expence, may poſſibly be made in the ſpace of eight or ten Years; but to make ſuch a Collection of *Foreign Foſſils*, as are exhibited in theſe *Catalogues*, will require an Age, and is not to be done without an univerſal Correſpondence, and an inconceivable Expence. This is neceſſary, whatever the *Exemplars* are; but to make a Collection of ſuch choice and curious ones as theſe, requires likewiſe an exquiſite Judgment, not above one in ten, perhaps, of the Bodies collected having been admitted by the *Doctor* to make part of it, whilſt the reſt were rejected for being defective in ſomething requiſite to render them fine *Exemplars*.

'Tis really amazing, how, amidſt the continual Buſineſs of his *Profeſſion*, and a Variety of other Avocations, he could find time to maintain all his Correſpondencies, collect ſo fine a Library, and ſo vaſt a Number of *Foſſils*, finiſh ſo many Pieces as he has printed and left in Manuſcript, and make himſelf Maſter of ſo many different Sciences. Nothing can account for it, but his conſtant and unwearied Application to his Studies, which took up all the Time that he could call his own; and which he purſued to the laſt Moments of his Life, for ſeveral Months that he was confined to his Bed, with uncommon Aſſiduity and Succeſs; he having wrote his Method of *Foſſils* during that Space, and being actually engaged in the printing of it at the Time of his Death.

This was a Work exceedingly wanted in the World, yet ſcarce ever attempted, and never executed before. Few or none, indeed, were equal to it; nor could any body have been qualified for it without a long Courſe of Enquiry, and accurate Obſervations, and ſuch a thorough Inſight into the Nature and Kinds of *Foſſils*, as enabled the *Doctor* to methodize them according to their ſeveral *Species*, and reduce them into a Science. We may now juſtly expect conſiderable Improvements in the Knowledge of this Part of Nature; and the Method, which he has publiſh'd, will make theſe *Catalogues* exceeding uſeful, and ſerve for a Direction to any one that has a *Goût* for the like Studies, and is determin'd to make his Collections with ſuch a *Choice*, and his Obſervations on them with ſuch an *Accuracy*, as may render them moſt inſtructive to himſelf, and moſt beneficial to Mankind.

As theſe *Catalogues* have been printed in great haſte, 'tis not impoſſible but the Reader may find in them ſeveral Errors of the Preſs, which he is deſired to excuſe, and ('tis hoped) will eaſily correct.

THE
PREFACE.

NOW, that I have been for ſome time engaged in Mineral Studyes, with no ſmall Application, 'tis a Pleaſure to me to find that it has not been wholly without Fruit. One Sample of which I gave in my Eſſay towards a Natural Hiſtory of the Earth; which met with ſo favourable Reception from the Publick, as to give me great Encouragement to proceed. I had indeed, before ever that Work was ſet forth, drawn up ſome others in purſuit of that Deſign: and have ſince added ſeveral more; to which I ſhall now ſubjoin the following, which exhibits an Attempt towards a Natural Hiſtory of the Foſſils of England.

This noble and happy Country is extremely fertil, as of thoſe above, ſo likewiſe of its Productions under Ground. Theſe it yields in great Number, and Variety: and many of them of extraordinary Excellence, Worth, *and Uſe *. Nor are there perhaps many, that, either by my own Searches, or the Diligence of my Friends, I have not procured Specimens of. There is indeed in this Collection, the far greateſt part, if not all thoſe that have been recounted by Writers: and a great Number more that have never been, either deſcribed, or ſo much as mention'd. Not but that this, and indeed every Attempt of this kind, muſt needs be defective, the Stores of Nature being endleſs and inexhauſtible. Nor can it be ſuppos'd that the Accounts of the Bodyes, here exhibited, are every where complete, or all the Deſcriptions of them full and perfect. But any other Man, who ſhall have Leiſure and Encouragement to purſue this Deſign, will here find Land-Marks and Notices ſufficient to conduct himſelf by, in that ſo uſeful a Purſuit.*

In order to the forming a better Judgment in this Affair, and making ſome Eſtimate of the Bodyes ſet forth in this Volume, I ſhall lay a brief Summary of all the ſeveral Kinds of them here in view.

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* See ſeveral Inſtances, *p.* 2. *&* 3. *infra.*

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So great a Variety as fifteen hundred Bodyes, and upwards, and each ſo much differing from other, that in the whole there are ſcarcely any two alike, in every reſpect, to be produced within the Bounds of one Country, muſt needs be allow'd to be very conſiderable.

ſiderable. All theſe I have endeavour'd to reduce to Method: and, where the Bodyes were capable of ſuch Diſtinction, caſt the various Kinds, with the ſubordinate Species, into Claſſes; according to their mutual Alliances, and their Relations to each other.

In ranking of them, I have founded my Judgment wholly upon their Nature and Properties, ſo far as the moſt rigorous Examination, and the exacteſt Experiments I could make, laid them open to me; not neglecting, in the mean time, ſuch Notices or Intimations as were given me by their Figure, and exterior Appearance, or any other Phænomena of them.

The Hiſtory, of the greateſt Part of theſe Foſſils, is here deliver'd a-part; together with an Account of the Place where every one was found. I ſhould have been glad I could, in each, have alſo ſet forth, what I have of ſeveral, at what Depth, and in what Manner it lay: among what Matter it was repoſited,: as alſo in what Plenty; along with all the other conſiderable Circumſtances of it. This is follow'd, as far as my other Affairs would permit, by particular Obſervations upon the Body itſelf: upon the Colour, the Bulk, the Form, the Texture, the Conſtitution, the Purity or Mixtures diſ-

diſcernible in it; and whatever elſe occurrs worthy of Notice and Remark. Next is ſet forth the Reſult of the Experiments, that have been made upon the Body, in order to diſcover the natural Diſpoſition and Properties of it: its various Medicinal, Mechanical, or other Uſes: and the ſeveral ſorts of Metall, or other Matter that conſtitute it, or are contain'd in it. In fine, upon theſe Hiſtories, Accounts, and Obſervations, are founded ſeveral Reflections and Inferences relating to the Origin and Formation of the Body: as alſo to both its paſt and preſent State and Condition.

This Method I have made choice of as the moſt plain and ſimple of all others: and conſequently the leaſt liable to miſlead me. The exterior Circumſtances of many of the Bodyes, while in the Earth, where they are deliver'd, 'tis done with real Care and Faithfulneſs: and none the leaſt Particular omitted that might give any Information or Light into the Natural Hiſtory of each. As to the ſeveral Phænomena of the Bodyes themſelves, they are at this Hour extant: and apparent in every ſingle Individual thorough the whole Collection. And for the Experiments, they were all made with the utmoſt Exactneſs and Circumſpection; beſides, that ſeveral of *them were repeated more than once. Now the Reflections, that are every where interſperſed, being founded intirely upon thoſe Circumſtances, Phænomena, and Experiments, are in truth ſo many Deductions from them: and therefore as much Matter of Fact as Thoſe are, and to be rely'd on with equal Certainty. This is evident at firſt View: and ſo inconteſtible, as to leave no Room for a Man of Underſtanding to doubt of it. Nor do I ſee any reaſon to call in queſtion either the Modeſty or Judgment of thoſe who think Natural Truths, when purſued in right Method, capable of being brought to the higheſt Stability and Demonſtration. I only wiſh I could ſay, All, who have wrote upon natural Subjects, had purſued that Method: and that both their Obſervations, and their Reaſonings upon them, had not given too juſt cauſe to the common Declamations of the Uncertainty of theſe Studyes. Then again, Some there have been who have reaſoned happily and ſucceſsfully enough upon the Obſervations they have made; but Thoſe have been too few to make any general Concluſions from: and of Extent and Strength not near ſufficient to bear the Bulk and Weight that they have been charged withall. I am far from going about to offer now a* *complete Theory of any of the Subjects here ſet forth; yet it may not be unſeaſonable to remark, that none of the Deductions are made from ſingle, or a very few, Inſtances. The Bodyes preſented in moſt of the Claſſes of this Catalogue are very numerous and various: and found frequently in Parts of the Kingdom, very diſtant from each other; not to enter here into a Detail of the Particulars of the Catalogue of the Foreign Foſſils, which exhibits Samples from even the remoteſt Parts of* Europe, *from* Aſia, Africa, *and* America; *in order to the carrying on the Natural Hiſtory of Foſſils quite round the Globe.*

I know well there are Thoſe who would have the Study of Nature reſtrain'd wholly to Obſervations; without ever proceeding further. But due Conſideration, and a deeper Inſight into Things, would ſoon have undeceived and made them ſenſible of their Error. Aſſuredly, that Man who ſhould ſpend his whole Life in amaſſing together Stone, Timber, and other Materials for Building, without ever aiming at the making an Uſe, or raiſing any Fabrick out of them, might well be reputed very fantaſtic and extravagant. And a like Cenſure would be his Due, who ſhould be perpetually heaping up *of Natural Collections, without Deſign of building a Structure of Philoſophy out of them, or advancing ſome Propoſitions that might turn to the Benefit and Advantage of the World. This is in reality the true and only proper End of Collections, of Obſervations, and Natural Hiſtory: and they are of no manner of Uſe or Value without it. 'Tis indeed what all intelligent Men would much rejoice to ſee proſecuted, not only thorough the Mineral Kingdom, but all Parts of the Univerſe; for the Honour of the great Author of all Things, the Enlargement of our Minds by the Diſcovery of uſeful Truths, and the common Good and Intereſt of Mankind.*

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CLASS I.

EARTHS, *and* EARTHY SUBSTANCES.

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C. 5. *Various Obſervations, and Reflections.*

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EARTHS, *and* EARTHY SUBSTANCES.

SECT. I. Earths *that have more or leſs of an unctuous Smoothneſs and Softneſs to the Touch.*

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a. 2. Another *Tobacco-Pipe-Clay*, of a whitiſh or very light grey Colour. From *Pool, Dorſetſhire, Cimolia alba.* Dr *Wyndebank*, in a Conſultation for the famous Mr. *Thomas Papilion* in a Fever, told me the *Cimolia alba* was one of the chief *Arcana* of Sir *Theodore Mayerne* in both intermittent and continuous Fevers.

a. 6. *Argilla, Clay*, of a pale Aſh-Colour. From *Thurſton, Northumberland.* The Bed of it is about 3 Foot thick, and lies under ſeveral *Strata*, and particularly one of Coal. 'Tis uſed for making the Pots imploy'd for melting the Glaſs-Metal at *Newcaſtle:* endures the Fire to admiration, and is probably the beſt for that purpoſe of any in *England.*

a. 10. *Fullers-Earth*, of a grey Colour, with a Caſt of greeniſh Yellow. From *Wooburn* in *Bedfordſhire.*

a. 11. Another Sample, little different, only the Colour is ſomewhat darker. From *Detling*, near *Maidſtone, Kent.* This *Fullers-Earth* lay 33 Foot deep; the *Stratum* of it is about a Foot thick. Immediately over this was the *Stratum* of the following *Fullers-Earth*, *a*. 12. which was about five times as thick as the *Stratum* of this. Above that was a *Stratum* of *Loam*, abounding with Sand 25 Foot thick, and over all a *Stratum* of common vegetable Mould about 2 Foot thick. The Workmen ſink for the *Fullers-Earth* in ſeveral Places in the Ground all round, and find the *Strata* of *Mould, Loam*, and *Fullers-Earth* every where lying in the ſame Order, and of much the ſame Dimenſions with thoſe ſet forth above. In the *Loam* they find Variety of Sea-Shells, Oyſters, Cockles, and the like: as alſo River-Muſcles; which they do likewiſe ſometimes in the *Fullers-Earth*; but thoſe in this laſt are generally much rotten and decay'd.

a. 12. Another, of a dark grey Colour, approaching to black. From the ſame Pit.

Of the Excellence of the ſubterraneous Productions of England.

Fullers-Earth is a thing of great Service and Importance. 'Tis a Property of it to imbibe Oyl, Greaſe, and other unctuous Subſtances; and the great Uſe that is made of it, is for the cleanſing of Woollen-Cloth. Every body knows how frequently Tar is employ'd, as alſo Tallow and Greaſe, in the external Affections and Diſeaſes of Sheep. Nor can the Wooll be work'd, or made up, without being firſt greaſed or oiled: All which unctuous Matter muſt be taken forth again out of the Cloth before it can be worn. Nor is any thing yet known ſo ſerviceable to that purpoſe as this Earth. And as the *Fullers-Earth* of *England* is very various and copious, ſo it very much exceeds any yet diſcover'd abroad in goodneſs. Which indeed is one great Reaſon why the *Engliſh* ſurpaſs all other Nations in the Woollen Manufacture: And, to preſerve and ſecure this to the Country, the Exportation of *Engliſh Fullers-Earth* is reſtrain'd by Act of Parliament. This Earth is one illuſtrious Inſtance of the Pre-eminency of our Soil, and the Excellency of the Productions of the Earth of this Kingdom above moſt others. Another Inſtance we have in *Wadd*, or *Black-Lead*, a Mineral of great Uſe and Value: Nor is there any of worth yet found out in any part of the Globe beſides. The *Amber* and *Jet* of *England* are found in conſiderable plenty, and are much finer than any I have ſeen from abroad. Even our *Canal-Cole* nearly equals the foreign *Jet*. Nay, the common *Cole* is infinitely ſuperior both in Goodneſs and Quantity to any got elſewhere. There are in this and the following Claſs, various Inſtances of the Pre-eminency of the *Engliſh Earths*, the *Gravels*, the ſeveral ſorts of *Stone*, *Slates*, *Flags*, and other Bodies that are fitted to various Purpoſes, and are of mighty Importance in great variety of human Affairs. As are alſo *Vitriol* and *Alum*, which are found in greater plenty here, than in any other Country; inſomuch, that we can ſell them cheaper than Foreigners can. Then the *Tin* found in that one County of *Cornwall*, to ſay nothing of the Excellency of it, is ſuperiour in Quantity to all that is got in the whole World beſides. The *Lead-Ore* of *England* yields a great ſhare of Metal, and is found in greater abundance than in any other Country; beſides, that it runs kindly in the Fire, with leſs Trouble and Expence, is better, ſofter, more ductile and fit for uſe than the foreign *Lead*. Which yet does not ariſe from any Peculiarity in the Metal; for Metals of the ſame ſort, when reduced to an equal Purity, are alike, in all reſpects, in what Country ſoever they be got: but becauſe the *Spar*, and other extraneous

Matter, incorporated with the *Engliſh Lead* in the *Ore*, happens to be of ſuch Nature and Diſpoſition, as to be wrought upon eaſily and freely to part from it. For the other Metals, *Copper* and *Iron*, *England* likewiſe affords them in great plenty: and ſeveral ſorts of their *Ores*, not underſtood in former Times, have been now lately diſcover'd by the Diligence and Curioſity of the Searchers into Nature here. To the ſame Diligence are alſo owing ſeveral Methods of melting and working *Ores*, that are not only new, but far ſurpaſs any that ever were in uſe in foreign Parts, both for Convenience, Cheapneſs, and Expedition. As to *Gold* and *Silver*, *England* affords both, and in greater Quantity too than is commonly imagined; which ſeveral late Tryals have taught me. Then we have *Carnelions*, *Agates*, *Mochoes*, *Onyx's* and *Jaſpers*: as alſo *Topazes*, *Emeralds*, and *Saphyres*, tho' they are not ſo hard as the oriental. The *Diamond* indeed we want, and ſome few others of the *Gem-kind*: But, excepting theſe and *Cinnabar*, which is the *Ore* of *Mercury*, I know no Metal, Mineral, or Foſſil whatever that *England* does not yield; ſo very fertile is it, and happy in its Productions under ground, as well as in thoſe above, and in its Clime and Situation; its Laws, Government and Conſtitution.

a. 16. *Clay*, of an Aſh-Colour, very ſmooth and fine, and adhering ſlightly to the Tongue. It abides the Fire well for ſeveral Days, and ſerves for the making the Pots that are uſed for the incorporating of *Calamin* with *Copper*, in order to the making of Braſs. 'Tis got at *Cheame* near *Epſom*, *Surrey*.

ARTIC. 2. *Thoſe that will not adhere to the Tongue.*

a. 20. *Steatites*, white, with Veins of red. From the *Sope-Rock*, ... *Cornwall*. A conſiderable Part of the Cliff near the *Lizard-Point* conſiſts of this Earth. From ſeveral Tryals that have been lately made for the baking and making this Earth into Pots, I am ſatisfy'd that 'tis not much inferior to that of which the *Porcellain* is made, and that the Pots formed of it would be near as fine, did our Potters underſtand the Ordering and Management of it ſo well as the *Chineſe* do.

a. 21. *Steatites*, ſpotted, veined, and variegated with red and white like a *Marble*. From the ſame Place.

a. 22. *Steatites*, much like the foregoing. 'Tis found among the *Iron-Ore* at *Langron*, *Cumberland*. 'Tis very much harder than when firſt taken out of the Earth, it having then a Conſiſtence not much more firm than that of Tallow.

SECT. II. Earths *that are more or leſs dry, and harſh to the Touch.*

a. 30. A Dusky grey *Earth*, become very hard ſince it was dug up. Found near *Sturbridge* in *Worceſterſhire*. Of this they make the Pots in which the Glaſs-Metal is melted in the Furnaces. If they are well made, they will endure a very intenſe Fire for three or four Months.

a. 31. Another-like *Earth*, but rather paler, uſed for making Bricks for the inſides of Furnaces, at the Lord *Derwentwater*'s Lead-Works near *Haden-Bridge* in *Northumberland*.

a. 32. A light brown *Earth*, become now very hard. 'Tis uſed for poliſhing, and call'd by the Workmen *Rottenſtone*.

a. 33. An *Earth* of an Aſh-Colour, very fine. *Sherborn*, *Glouceſterſhire*.

a. 40. A whitiſh gritty *Earth*, ſent by Mr *Morton* with the Title of *Calx nativa*. It makes an excellent Plaiſter, or Cement, mix'd only with Water, without previous burning. From *Clipſton Stone-Pit* in *Northamptonſhire*.

a. 45. A looſe *Earth*, very fine, of a brown Colour. Found in *Wooky-Hole*, near *Wells*. 'Tis uſed by the Silver-Smiths for Caſting.

a. 50. A looſe *Earth*, of a pale green Colour. Found adhering to the Sides of the great Copper-Vein at *Goldſcalp*, *Cumberland*, being brought by the Water which is perpetually trickling down thoſe Sides. This is the ſame with what is called *Terre verte*, and doubtleſs owes its Colour to an Admixture of Copper.

a. 51. More, little different. Found on *Wenskill-Hill* near *Settle*, *Yorkſhire*.

a. 52. A like *Earth*, but of an azure or bright blue Colour. Found together with the former, and uſed by Painters by the Name of *Lambert's-Blue*. This is the ſame with the *Lapis Armenus* of the Shops, and owes its Colour to an Admixture of Copper.

a. 55. A looſe *Earth*, of a pale Fleſh-Colour, *i. e.* white with a bluſh of red. Found in ſmall Fiſſures of a brown ſoft Stone in the *Skrees*, a Mountain in *Cumberland*.

a. 60. *Chalk*, from *Greenhyth* in *Kent*. Fine clean *Chalk*, is one of the moſt noble Aſorbents I know: and moſt powerfully corrects and ſubdues acrid Humours in the Stomach; tempering and allaying the Emotions and Ebullitions of them. This property is what renders it ſo very ſerviceable in the *Cardialgia*, or *Heartburning*; an Affection of the upper part of the Stomach cauſed by the aſcent of hot acrid corroſive Steams: and in Diarrhæas or Fluxes. In the Heartburning, the common People diſſolve ʒj or ʒij of it in a Glaſs of Spring-Water, which ſeldom fails of giving them Relief. Indeed I my ſelf have known it, in ſome of the moſt obſtinate Caſes of this kind, ſucceed very happily, where Crabs-Eyes, Pearl, the cretaceous Matter in Oyſter-ſhells, and the other Teſtaceous Abſorbents, availed little. Nor is it leſs helpful in Diarrhæas. Thoſe who frequent the Sea, and are not apt to vomit at their firſt ſetting forth, fall frequently into Looſneſſes, which are ſometimes long, troubleſome, and dangerous. In theſe, they find *Chalk* ſo good a Remedy, that the experienced Sea-Men will not venture on board without it. They chiefly make uſe of that which is contain'd in the Shells of *Echini Marini*; which indeed is uſually very fine and pure. Theſe are dug up very commonly in the *Chalk-Pits* on each ſide the River, at *Purfleet*, *Greenhyth*, and *Northfleet*, where the *Chalk-Cutters* drive a great Trade with the Sea-Men, who frequently give good Prices for theſe Shells, which they call *Chalk-Eggs*.

a. 62. A looſe white Earth, light, and very fine, part of it concreted into little Lumps, and part in a mealy Powder, found in the Slate-Quarry at *Colly-Weſton*, *Northamptonſhire*. This is the *Lac Lunæ* of Dr. *Plot* and other late Writers.

a. 65. An Earth, very fine, and light; almoſt of the conſiſtence of *Chalk*; but of a dark brown Colour, with a caſt of Yellow. 'Tis a ſort of *Umbre*, found plentifully in a Vein of *Lead-Ore*, the ſame in which the cryſtalliz'd *Ore*, *n*. 120. was found, in *Arkendale*, *Yorkſhire*. I never ſaw of it elſewhere. *Vide a*. 76. *&* 77. *infra*. The *Earths* that are found in *Strata*, are commonly mix'd, foul, coarſe, and groſs: but this *Umbre*, the yellow *Ochres*, *a*. 76. *&* 77. and the red *Ochre*, *a*. 90. conſiſt of Matter extremely ſmall, ſubtile, and even impalpable. Indeed, being found in the perpendicular Fiſſures of the *Strata*, it could not be otherwiſe: for all the Matter that compoſes them, muſt have paſſed the Pores of thoſe *Strata*, before it could arrive at thoſe Intervals; which it could never have done, had it not been very ſubtile and fine. This Conſtitution of theſe *Earths*, renders them far above all others fit for Colours for the uſe of the Painters.

a. 67. Another, of a dark brown Colour, with a ſmall Caſt of red, and thick ſet, with bright ſhining Sparks extremely ſmall. Out of a Fiſſure of a Mountain near the *Skrees*, *Cumberland*. There is *Iron-Ore* frequently found in the Fiſſures thereabouts.

a. 68. Another, black, out of the ſame Fiſſure.

a. 69. Another, likewiſe black, but with Specks of white and red, found in large Maſſes upon the top of a flat Mountain, near . . . . in *Cumberland*.

a. 75. *Yellow-Ochre*, very fine, from *Shot-over-Hill* near *Oxford*. This has been waſh'd. The *Ochre* here conſtitutes a *Stratum* of 3 or 4 Inches thick, about 10 Foot deep. Over it, in Sand, lie numerous ferruginous *Geodes*, holding in them ſome *Ochre*, others *Sand*. See one of theſe among the additional *Engliſh* native Foſſils, *b*. 79. *Confer*. *a*. 85. *infra*.

a. 76. *Ochre*, very fine, of a deeper Yellow, found in the ſame Fiſſure with *a*. 65. In ſinking the Shafts for Lead, at about the diſtance of half a Mile, they paſs a *Stratum* of Coal about a Foot thick. *Vid. a.77. infra.*

*a.*77. Another Sample, more harſh, and likewiſe ſomewhat harder, brought by the Water that runs out of the Adit of a Coal-Pit at *Broughton,* near *Cockermouth* in *Cumberland,* and ſettled down in Cavities at the bottom of the Adit, over which the Water paſſes. This is common in the Adits of many of the Cole-Pits in the *North.* I take it to be the ochreous Part of the *Coal,* drain'd out by the Water, the bituminous Part never ſettling, but appearing upon the Surface of the Water, and ſwimming off. *Vide a.65. & a.76. ſupra.*

*a.*78. *Yellow-Ochre,* coarſe, veined with red and black; found upon a Moor near *Whitehaven,* in *Cumberland.*

a. 85. A harſh *Earth,* compoſed of Plates, alternately white and yellow; out of a Pit in which the *Yellow-Ochre, a.*75. is got, on *Shot-over-Hill* near *Oxford.* This is the *Ochre* mention'd by Dr. *Plot*; but with the yellow has ſome white intermix'd.

a. 86. A harſh *Earth,* variegated with yellow and purple; found on the ſide of a Ditch near the Hill where Oyſter-Shells are dug out, near *Hedley* in *Surrey.*

*a.*90. *Earth,* very fine, and of a bright red, preferable to that brought from the *Eaſt-Indies* for the uſe of Painters; found in a Fiſſure, among *Iron-Ore,* in the *Skrees,* a Mountain in *Cumberland.* 'Tis a *Red-Ochre. Conf. a.*65. *ſupra.*

*a.*91. *Red-Ochre,* from . . . . in *Staffordſhire.*

*a.*92. *Red-Ochre,* more ſtoney and hard; from . . . . . . *Cumberland,* Lord Biſhop of *Carliſle.*

*a.*100. *Loam,* very fine and ſoft, with very ſmall Spangles of *Micæ* in it; uſed for Moulds by the Bell-Founders. *Thrup, Northamptonſhire.* Mr. *Morton.*

a. 101. *Loam,* more harſh, uſed for making the Bricks employ'd in building the Wind-Furnaces for melting Iron with Sea-Coal. 'Tis got at *Hedgerley,* about five Miles from *Windſor.*

a. 102. *Loam,* of a dusky green Colour, appearing to be compoſed of *Clay* and fine *Sand,* and the Tincture to be owing to an Admixture of a *Vitriolum Martis*: From *Hamſtead-Heath,* near the Mineral-Spring; where 'tis found in conſiderable plenty.

a. 103. A reddiſh brown *Clay,* juſt as digg'd up out of the Earth. 'Tis uſed to make Bricks, and is of the beſt ſort of *Brick-Clay,* dug up in the Fields on the Eaſt-ſide of *Hyde-Park.*

a. 104. *Clay,* little different from the foregoing, uſed for making of Tyles; from *Kilburn,* near *Marybon, Middleſex.* There are found among this *Clay* ſome *Selenitæ*: and there are many ſmall ones in one Part of this very Maſs; indeed there appear Sparks of that Body in all Parts of it. This had been flung up ſome Months, and expos'd to the Air: and there are green (*Conf. a.* 102. *ſupra,*) Efflorеſcencies in ſeveral Parts of it, which ſeem to be of Vitriol; that Mineral, and the Pyrites, being very frequent in almoſt all Parts about this City for many Miles round.

There is very little *Earth* that does not contain ſome Salts in it. 'Tis very providential indeed, that thoſe Salts are ſo diſpers'd in it; they ſerving to mellow the Earth, as the Husbandmen ſpeak, to open, looſen, and diſentangle the Matter that ſerves for the Increment and Formation of Vegetables. The Deſign of the Workmen, in expoſing the *Clay* to the Rain and Weather, is to drain it from thoſe Salts, that the Bricks and Tiles may be the more firm and durable. If the Salts be not drawn forth before the *Clay* is baked, they do not only hinder its ſetting well in the Kiln, but are apt to liquate afterwards, and ſo make the Bricks and Tiles moulder and decay. I think there is an Act of Parliament aſcertaining how long time the *Clay* is to lie expos'd before it be work'd up. The Pot and Tobacco-Pipe-Makers ſteep their *Clay* in Water for ſome time; and by drawing off the Water, drain forth the Salts before they uſe and make up the *Clay*.

a. 105. *Clay*, of a light brown Colour, uſed for the making Tiles, got in the Fields near *Pancraſs*. There are in it Veins of a blueiſh marley Matter; and, in ſome parts, very ſmall *Selenitæ*. The *Clays* uſed for the making Bricks and Tiles, all burn red, and doubtleſs hold ſome ſhare of Iron.

a. 110. *Common Vegetable Mould*, of a blackiſh Colour, taken up juſt under the Turf near *Peckham* in *Surrey*. See *The Nat. Hiſt. of the Earth*, 2d Edit. p. 12.

APPENDIX I. to CLASS I.

SANDS.

EXTRACT.

SPangles, *of a white ſilvery Talc, in* Sand, † a. 7.

Spar, *from a Vein, in form of* Sand, † a. 2.

Sand, *cohering pretty firmly, and having the Conſiſtence of a ſoft Stone*, † a. 4.

Sand, *moulder'd, and beat off the Rocks by Weather*, † a. 9.

Sand, *uſed for the making of Glaſs*, † a. 1.

Sand, *diſpos'd into its preſent State by the flowing of the Water, departing at the Deluge.* Vide Preface to App. II. to Claſs I.

AP-

APPENDIX I. to CLASS I.

SANDS.

†*a.* 1. WHITE *Sand,* uſed for the making Glaſs. From the *Iſle of Wight.*

†*a.* 2. Looſe Matter in form of *Sand,* very white and ſparkling. It exactly reſembles a fine white *Spar,* when broken; and indeed 'tis only *Spar* found in this manner. From a Vein of *Lead-Ore,* in *Barrow-Work, Cumberland.* There is found in the ſame Vein, as alſo in the Lead-Mines of *Arkendale,* of this very Matter, much groſſer, to the bigneſs of Peaſe. Where there is found any of this Matter, the Maſſes of *Spar* in the Vein are uſually very ſhattery and friable: ſo that this is doubtleſs nothing but *Spar,* either formed thus, or ſhatter'd and fallen to pieces.

†*a.* 3. *Sand,* pretty groſs, of a pale brown Colour, with a Caſt of yellow; from a Gravel-Pit, near the Road a little on this ſide *Newington, Middleſex.*

†*a.* 4. *Sand,* very fine, of a grey Colour, with a Caſt of green; out of a vaſt *Stratum,* lying underneath the *Loam* in the great Pit at the further end of *Woolwich, Kent.* This *Stratum* is bared down for near 20 Foot. It may be much thicker, they having not digged to the bottom of it. The *Stratum* of *Sand* at the hither end of *Woolwich,* and that at the farther end of *Deptford,* is wrought as deep into, tho' they have not ſunk to the bottom of either. The *Sand,* in ſome parts of all theſe Pits, hangs pretty firmly together, and is in form of a ſoft friable Stone.

†*a.* 5. Fine *Sand,* of a very light brown Colour; from the great *Sand-Pit,* at the hither end of *Woolwich, Kent.*

†*a.* 6. *Sand,* pretty fine, brown, with a Caſt of red; from a *Sand-Pit* on the *South-Eaſt* ſide of *Croydon, Surrey.* There was alſo, in the ſame Pit, *Sand* exactly of like Colour and Conſtitution with that †*a.* 4. Both ſorts are got here in great plenty.

†*a.* 7. *Sand,* fine, of a yellow Colour, with Spangles of a white ſhining Talc amongſt it. Out of a Gravel-Pit on *Hamſtead-Heath,* where 'tis found in conſiderable plenty.

†*a.* 8. *Sand,* part pellucid, part yellow, and part black. From a Gravel-Pit on the *South* ſide of *Marybone.*

† *a.* 9. *Sand,* of a pale Colour, very near white. From *Mount-Hermon,* near *Tunbridge-Wells.* 'Tis found in conſiderable plenty on the ſides, and at the bottoms of the naked Rocks there; from which indeed 'tis moulder'd, and ſucceſſively driven down by the Action of the Rain and Weather upon thoſe Rocks, which conſiſt entirely of this ſort of *Sand,* and are externally tender and friable, tho' they be more firm and ſolid deeper and within. *Conf. b.* 34. *infra, Cl.* II. *p.* 1.

† *a.* 10. *Sand,* white, ſhining, and very ſmall; from *Congham* by *Lynn,* in *Norfolk.* 'Tis found there in great quantity.

APPENDIX II. to CLASS I.

GRAVEL.

PREFACE.

THE *Gravel about* London, *and in moſt parts of* England, *is no other than Pebles, or Flints, or both, with an Intermixture of Sand, chiefly of that ſort that is compos'd of extreme little and ſmall Pebles.*

The People of thoſe Countrys that afford no Gravel, are very ſenſible of the Inconveniencies that attend the want of it. England *abounds, in ſeveral Parts, with ſuch as is very fine and good: and may be brought to be very ſmooth, binds well, and is capable of a very firm Conſiſtence, ſo as to ſerve for the covering and making Alleys, and Walks.*

That ſort of Sand, that is in common Uſe about this Town, brought from Black-Heath, *and other Parts of this Neighbourhood, viewed with a Microſcope, appears to be nothing but very ſmall Pebles. It is found likewiſe in ſeveral other remote parts of the Kingdom. Whoever ſhall attentively conſider the Manner in which this lies in the Earth, will ſee that it is not in regular orderly Strata, of equal thickneſs in all parts, as Stone-lies, and various ſorts of Earth which are in their original State, and juſt as they ſubſided from the Waters, ſtagnating at the Deluge. No, this lies in Trains, and manifeſtly pitched in Streaks, and juſt as it would be caſt by Water, flowing, in its departure towards the Ocean, and the Inlets of the Abyſs, which are at the bottom of it. Gravel is ſhot and pitched into the ſame Method: and doubtleſs owes its diſpoſition to the ſame*

Cauſe. What adds much Confirmation to this is, that both are found, commonly out of their proper Region, caſt on lighter Matter that is diſpos'd into Strata, and is in its original State. Thus we ſee even in this Neighbourhood near Deptford, *on other Parts of* Black-Heath, *and in many more Places, a great Quantity of Sand, and Gravel, lying above Chalk: and when we come to dig thorough perhaps twenty or thirty Foot of Gravel down to it, we find the Chalk lying, in regular Horizontal Strata, underneath, down frequently to a very great depth. In my anſwer to Dr.* Camerarius, (*pag.* 64, & ſeqq.) *I have ſhewn what a vaſt and immenſe Quantity of Water there lay on the Surface of the Globe during the Deluge. And this was not only of mighty Bulk and Weight, but ſeems to have paſſed off in Hurry and Precipitation. There are in many Parts of the Earth Marks of the greatneſs of its force, and the Havock it made at its departure. In ſome Countries we find Fragments of Stone, of many Ton in Weight, where none of like ſort is found, there, in the Earth, they having been torn off, and brought from afar. Leſſer Bodies ſo imported, are found in many Countries without Number. By ſuch Quantitys of Matter, ſolid Stone, and the like, and looſe Sand and Earths, being taken from one part of the Globe, and conveyed to others, great Alterations were made in the Surface. As to Sand and to Gravel, 'tis very probable the Pebles and Flints that conſtitute them were depoſited at firſt, diſperſedly, in the Strata of Earth, Clay, Marl, Loam, or the like, as we at this day find them in ſuch Strata as are yet entire. But when thoſe Strata were torn up, and born off by the Water, the Earthy Matter, that was ſofter and lighter, would be eaſily waſhed away, and ſeparated from the Pebles and Flints, that were harder and heavier. So that 'tis not ſtrange that this ſort of Sand, Pebles, and Flints, are found at this day collected together, and extricated from other Terreſtrial Matter. We ſee Inſtances of the like on the Sea-ſhores: Nor was this Hurry of the departing Waters without a Providential Conduct. Theſe, and other Bodies, of greater uſe to Mankind, were ſelected, and brought together by it: The Bowels of the Earth were laid open to human View, and the Riches there brought nearer to the Hand of Man. The Loads or Veins of Metal were by this Action of the departing Water made eaſy to be found out by the Shoads, or Trains of Metallic Fragments, born off from them, and lying in Trains, from thoſe Veins, towards the Sea, in the ſame Courſe, that Water falling thence would take.*

There are Pebles and Flints now frequently found, among the reſt in Gravel, that have their Surfaces rubb'd and ſmoothed, nay ſome much ground, and worn. All which was done by the hurry and force of the Water, in their removal from Place to Place. There are ſome Inſtances of this in Claſs III. *particularly, c.* 227.

EXTRACT.

Gravel and the common Sand, clear'd, collected, and put into its preſent Poſture and State by the Water, of the Deluge, departing, p.

Gravel conſiſts of Sand, and Pebles or Flints. Of the goodneſs of the Gravel of *England*. The Uſefulneſs of it.

GRAVEL.

x *a*.1. Gravel from a Gravel-Pit on *Hamſtead-Heath, Middleſex.*

CLASS II.

FOSSILS *that are ſolid, and form'd into Strata.*

EXTRACT.

PART I. Stone and Stony Subſtances.

SECT. I. *The ſeveral ſorts of Stone that break with equal indifference in any Direction.*

Free-ſtone, *b*. 1. to *b*. 14.
Grind-ſtone, *b*. 30, 31.
Cos aquaticus, a ſort of *Grind-ſtone, b*. 30.
Whet-ſtone, b. 32.
Sand-Stone, b. 34.

C. 1. *Extraneous Matter found lodged in Stone.*

Mica in Stone, *b*. 1. 31, 32.
Selenitæ in Stone, b. 13.
Spar and Cryſtal in Stone, *V*. x *d*. 40. *Cl*. 4.
A pitchy, or bituminous Matter in Stone, *g*. 1.
Nitre in Stone, *g*. x 30, 31.
Minerals of all ſorts in Stone, Claſs 8, 10, 11.
Metals of all ſorts in Stone, Claſs 12, *&* *ſeq.*

C. 2. *The Mechanical Uſes of the ſeveral ſorts of Stone in this Section.*

A *Stone*, that endures the Fire, uſed for Hearths, *&c*. *b*. 1.
——— uſed for the Inſides of Cupoloes, employ'd in melting Copper, *b*. 31.
Freeſtone uſed for Hewn-Work in the beſt Buildings, *b*. 12, 13. 14.
Stone uſed for Floors, Pavements, *&c*. *b*. 20, 21, 22.
Stone uſed for whetting chiefly Scithes, *b*. 32, 33.
—— for Grinding, *b*. 30, 31.

Sect. II. *The ſeveral ſorts of Stone that break or riſe ſtreight in only one Direction; ſplitting with a Grain, lengthways, or parallel to the Site of the Strata.* V. Cl. 2.

Whetſtone, *b*. 60.
Limeſtone.
Ragſtone, *b*. 70.
Blue Slate, *b*. 80.
White Slate, or *Flag*, *b*. 85.

C. 1. *Extraneous Matter found in the Stone exhibited in this ſecond Section.*

Mica in Stone, *b*. 60.
—— in white Slate, or Flag, *b*. 85.
Talc in Rag-ſtone, *b*. 70.
—— in blue Slate, *b*. 80.
Salts in Shiver, *b*. 90.

C. 2. *The Mechanical Uſes of the ſeveral ſorts of Stone in this ſecond Section.*

Stone uſed for whetting Tools, *b*. 60.
A ſmooth Stone uſed for ſetting a fine Edge, *b*. 70.
Slate uſed for covering Houſes, grey, *b*. 80.
—— White, *b*. 85.
A *white Stone* uſed for the flagging of Floors, for Ciſterns; and Tanners Fatts, *b*. 85.
Shiver uſed in Agriculture. The Salts in it, when liquated by Rain, ſerve to mellow, open, and relax the Earth, *b*. 90. *Conf. Cl*. 1. *a*. 104.
Limeſtone. Of the great Uſe of Lime in Agriculture, Building, dreſſing of Leather, making of Soap, Fuſion of Metals, *&c*. Alſo of its Uſes in Phyſick, Surgery, and Farriery.

Sect. III. *The ſeveral ſorts of Stone that will not break ſtreight, or in any certain Direction; but, by reaſon of certain Flaws, and Chaps, ſhatter, and break irregularly, and croſs-grain'd; ſo as to be of little Mechanic Uſe.* Conf. Cl. 2.

Appendix. *The Error of thoſe who ſuppoſe that Stone now grows.* *f*. x 53.

Part II. Alabaſter, † *b*. 1. *Conf. Cl*. 2.

Part III. Marble.

Marble is found both in Strata, and in perpendicular Fiſſures, *Cl*. 2. *Pref*.
That found in thoſe Fiſſures has no Sea-ſhells in it, *ibid*.

Maſſes of fine Marble found on the Sea-ſhores; being Fragments, of Strata, that are worn round by the Agitation of the Sea, *ibid.* or of the Water, departing, at the end of the Deluge. *Conf. Ap. to C.* 2.

Of the *Marmor fuſile,* and the ſlender round *Scapi* of Pillars, in ſeveral Churches of *England,* ſuppoſed to be made of it. x *b.* 60. *Conf. Cl.* 4.

Sect. I. *Veined Marble,* Cl. 2.

Sect. II. *Spotted Marble,* Cl. 2.

Porphyry, ⊖ *d.* 36,39.
Granite, ⊖ *d.* 32,38. 38*. 38†.
Ophites, x *b.* 25.

A *greeniſh Marble,* with *Linum Asbeſtinum* in the Seams of it; + *d.* 8, *& ſeq.* x *b.* 28.

Sect. III. *Marble both vein'd and ſpotted.*

Sect. IV. *Marble variegated and diſtinguiſhed by Sea-ſhells, Corals, and other extraneous Bodies, contain'd in the Maſs of it.* Conf. Sect. 4. x *b.* 60.

Some of the River and Sea-ſhells were filled with Spar before they were lodg'd in this *Marble.* x *b.* 60.

Sect. V. *Flinty-Marble, or that nearly approaches Bodies of the Flint or Agate-Kind, in Hardneſs, Politure, and Complection.*

Flinty Matter found both in Nodules and in Strata. *Conf. Pref. to this Sect.*

Chert or *Whern,* x *b.* 85.

CLASS II. (*b*).

Foſſils *that are ſolid, and formed into Strata.*

Part I. Stone and Stony Subſtances.

Sect. I. *The ſeveral ſorts of Stone that break with equal indifference in any Direction.*

b. 1. *Stone,* ſoft, and of a pretty ſmall Gritt; of a pale Grey Colour near white; with numerous ſmall Micæ of a white Silvery Talc. It endures the Fire well: and is therefore ſometimes uſed for Bottoms of Ovens, but chiefly for Hearths, and Coveings of Chimneys. Got in conſiderable plenty near *Rygate, Surrey.*

b.12. *Stone*, out of the great Quarry of *Portland*, of a pale or whitiſh Colour, compoſed of numerous ſmall roundiſh Grains, not unlike the ſmaller Ova of Fiſhes. They ſplit in the cutting of the Stone; ſo that it is capable of being brought to a Surface very ſmooth and equal. Beſides, this, and all like ſorts of Stone that are compoſed of Granules, will cut and rive in any Direction: as well in a Perpendicular, or in a Diagonal, as Horizontally and Parallel to the Site of the Strata. 'Tis for this reaſon that they have obtain'd the Name of *Free-ſtone*. Then theſe bear the Injuries of the Weather equally and indifferently in all Poſitions. Whereas all the Stone that is Slaty, with a Texture long, and parallel to the Site of the Stratum, will ſplit only lengthways or horizontally: and, if placed in any other Poſition, 'tis apt to give way, ſtart, and burſt, when any conſiderable Weight is laid upon it. Which Inconveniences the *Portland-Stone*, being not liable to, cutting freely, and being of a Colour very good and agreeable; 'tis made uſe of for the better Buildings and Works about *London*.

b. 13. Another Maſs of Stone, of like Texture, and from the ſame Quarry; but not quite ſo white. There are in this Maſs ſeveral ſmall Selenitæ: and, in ſome Maſſes of this Stone, I have ſeen much larger.

b. 14. *Stone*, of a pale brown Colour, very thick ſet with Pellicles of the Ova of Fiſhes, and ſmall teſtaceous Bodies, from *Ketton, Northamptonſhire*. This alſo is Free-ſtone, and made uſe of for Building, particularly of ſeveral of the Colleges in *Cambridge*.

b. 20. *Stone*, of a light grey Colour, and of a pretty fine Grain; uſed for Paving. From *Purbeck*.

b. 21. *Stone*, of a light brown Colour, uſed likewiſe for Paving. From *Purbeck* alſo.

b. 22. *Stone* of a dusky brown Colour; thick ſet with Sea-ſhells. Uſed alſo for Paving. From the ſame Place.

b. 30. *Stone*, Brown, and of a pretty harſh Grit; uſed for Grind-Stones. *Cos aquaticus*. From *Newcaſtle*.

b. 31. *Stone*, of like Grit; having ſeveral Micæ of white Talc in it. 'Tis of a grey Colour, with a Caſt of Red. From *Whitehaven, Cumberland*. 'Tis made uſe of there for Building: as alſo for Grind-Stones. It abides Fire very well: and therefore is likewiſe employed for the Building of the inſides of the Cupuloes for running of Copper there.

b. 32. *Stone*, of much the ſame Conſtitution and Complexion, with that *b*. 1; only it has a ſlight Caſt of Brown. There are likewiſe in it numerous Micæ of a white Silvery Talc, and ſome very ſmall ones of black Talc. This is uſed for whetting Scithes. 'Tis of the finer ſort, and therefore is called *fine Scithe-Stone*, or *Rubber*. From *Heage*, in *Derbyſhire*.

b. 33. *Stone*, compoſed of white and brown Grains, with ſmall Micæ of a Silvery Talc. This likewiſe is uſed for whetting of Scithes: and having a groſſer Grit than the precedent, is call'd, *Sand-Stone, Coarſe-Scithe-Stone,* or *Rubber.* From *Spoondon,* in *Derbyſhire.*

b. 34. *Sand-Stone,* from Mount *Hermon,* near *Tunbridge-Wells.* There are ſeveral naked Rocks of it, compoſed of Grains of Sand, (*Conf.* † *a.* 9. *App.* to *Claſs* 1.) partly white, and partly pellucid. The exterior Parts of the Rock, that are expoſed to the Weather, have frequently in them Spots and Veins of Black and Brown, as in this Sample, and ſometimes of Red; thoſe Colours ſeeming to have been cauſed by extraneous Matter introduced by Rain; the interior Parts of the Rock being generally free, clean, and white.

Sect. II. *The ſeveral ſorts of Stone that break ſtreight in only one Direction; ſplitting with a Grain lengthways, or parallel to the Site of the Stratum.*

b. 60. *Stone,* Grey, with a Caſt of Brown, with numerous extremely ſmall Grains of a black Mica, and ſome few, as ſmall of a Silvery. *Whet-ſtone* got near *Newcaſtle* upon *Tyne.*

b. 70. A grey talky Stone. This is call'd *Ragſtone,* and is uſed for ſetting an Edge to Knives, Chizels, Axes, and the like, after Grinding, or Whetting upon that ſort *b.* 60. or other like Stone that is harſher and of coarſer Conſtitution.

b. 80. *Slate,* Grey, with a Caſt of Green: of a gloſſy, talky Conſtitution: (*Conf. Claſs* 4.) ſplitting even, freely, and into very thin Plates. From a *Slate-Quarry* in *Newlands, Cumberland,* about a Mile from the *Black-Lead* Mines.

b. 85. This is call'd in the North, *White-Slate,* or *Flag.* 'Tis thick ſet with Spangles of white Talc; from a Quarry by the Road betwixt *Carliſle* and *Newcaſtle.* This ſort of Stone is frequent in thoſe Parts, and in the North of *Yorkſhire.* 'Tis of a pale Brown; but there is of it of a Grey, or Aſh-Colour. This is juſt half an Inch in Thickneſs; having the two Surfaces exactly ſmooth, even, and parallel to each other. This ſort is every where thus flat, riſing in this Form, and in Layers of about this Thickneſs, for perhaps ten or twelve Foot in perpendicular. But generally the uppermoſt Strata are the thinneſt; thoſe that lie deeper gradually encreaſing in Thickneſs, till at laſt they are ſo thick as not to ſerve for Slates. The thicker Flags they uſe for Ciſterns, and Tanners Fats, as alſo for Pavements and Floors: as they do the thinner for covering of Houſes. For this laſt Purpoſe they uſe Plates of this from one to four foot Square. For, in the Earth, each Flag, or Stratum, keeps the ſame Thickneſs in all Parts, how far ſoever it be purſued horizontally; till the Quarry terminates. They lie level generally, or a little inclining.

b. 90. *Shiver,* of a dark Aſh-Colour, near Black. From a Lead Mine at ———— not far from *Newcaſtle.* It lies in Strata. Some of it is pretty hard; and to that they give the Name of *Plate.* But the ſofter ſort, in raiſing, falls into Shivers like this in this Sample; which is the Reaſon of the Name. This Body much reſembles the Alum-Rock, both in Conſtitution and Colour: and indeed moſt of it holds of that Mineral, more or leſs; for which Reaſon, being wet, by Rain, or otherwiſe, the Salts liquating, it becomes ſoft like Marle; and, as ſuch, ſucceeds well in Agriculture.

SECT. III. *The ſeveral ſorts of Stone that will not break ſtreight, or in any one certain Direction: but, by reaſon of certain Flaws, and Chaps, ſhatter, and break irregularly, and croſs-grain'd; ſo as to be of little Mechanick Uſe.*

PART II. Alabaſter.

† *b.* 1. *Alabaſter,* from *Marged-Overton, Rutlandſhire.*

CLASS II.

PART III. *Marble.*

PREFACE.

THO' Marble *be frequently found lying in* Strata, *as is intimated in the Title at the Head of this Claſs, yet 'tis ſometimes likewiſe found in the perpendicular Fiſſures. That alſo is the caſe of* Alabaſter. *Of this there are Inſtances amongſt the* Vein-Stones: *in particular, that* † f. 9. (App. to Cl. 6.) *That which is found in thoſe Fiſſures, can never have Shells or other extraneous Bodies in it, as that which is in* Strata *uſually hath.*

There are ſome Marbles *alſo in the Liſt of the* Micæ: *and in particular the* Granite, ⊖ d. 32. 38. *38. *as alſo* Porphyry, ⊖ d. 36. 39. *Then, in the Appendix to this Claſs, there are Fragments of very various ſorts of* Marble *found upon the Shores of* England: *and ſeveral of them ſo beautiful, and fine, as to equal, if not ſurpaſs the nobleſt* Marble *I have yet ſeen from* Italy, *ſo as well to deſerve to have further ſearch made after them in the neighbouring Cliffs, from which, perhaps,* (Conf. App. to this Claſs.) *thoſe Fragments were forced by the Inſults of the Sea. And indeed ſeveral of the Maſſes in the Claſs of* Coralloid Bodies *appear to be Fragments of* Marble, *of that ſort ſet forth in the fourth Section of this Claſs, broke off the adjacent Cliffs, worn, and rounded by the Agitation of the Sea in Storms and Tides. In particular, that* e 22, *and ſeveral of thoſe that follow: as alſo* e 35. *and ſome others, found on the Coaſts of* Lincolnſhire *and* Yorkſhire.

In the ſame Appendix, and in Claſs III. *are likewiſe Inſtances of* Marble, *worn, and rounded, found at Land, and at diſtance from the Sea, that were torn from their original* Strata, *and ſo rounded* *by the Water of the Deluge retreating towards the Sea, and the Apertures at the bottom of the Sea, to which the Water tended, in order to its return thorough them back to the Abyſs.*

Sect. I. *Vein'd Marble.*

x *b*. 1. *Marble*, the Ground of a pale brown Colour, with Veins of white Spar, and ſome Lines of a purple Colour. From . . . . . . in *Somerſetſhire*.

x *b*. 2. *Marble*, of a yellowiſh brown Colour, with Veins of a bright Red and of White. From . . . . in *Wales*. Sir *Chr. Wren*.

x *b*. 3. *Marble*, of a dusky green Colour, vein'd with White. Found in the way betwixt *Ambleſide* and *Penrith*, in *Cumberland*; where there is a conſiderable Quantity of this ſort.

x *b*. 4. *Marble*, vein'd with White and Red. *Plymouth*. This is ſomewhat harder than the white *Genoeſe Marble*.

Sect. II. *Spotted Marble.*

x *b*. 25. *Marble*, the Ground of a dusky brown Colour, with oblong Spots of a bright Green. This is a Species of the *Ophites*, and was dug up in the Marle-Pit at *Hunton*, near the River *Medway* in *Kent*, mention'd by Dr. *Hatley*, *Philoſ. Tranſactions*, N° 155. p. 463. The Doctor ſent me this, averring 'twas aſſuredly dug up there, tho' he never ſaw any more of it.

x *b*. 27. *Marble*, the Ground grey, ſpotted with a pale green. Found on the Sea-ſhores at the *Oſtium* of the River *Palmer*, *Cornwall*.

x *b*. 28. *Marble*, the Ground dusky, near black, with a Caſt of Green, having in it Spots of a pale Green. In the Chaps, Seams, and Fiſſures of this, is found the *Linum Asbeſtinum*. From the *Iſle of Angleſey*.

Sect. III. Marble *variegated and diſtinguiſh'd by Sea-Shells, Corals, and other extraneous Bodies contain'd in the Maſs of it.*

x *b*. 60. *Marble*, from *Petworth*, *Suſſex*. The Ground grey, with a Caſt of green. 'Tis very thick ſet in all Parts of it with Shells, chiefly turbinated. Some of them ſeem to be of that ſort of River-Shell that Dr. *Liſter*, *Hiſt. Cochlear. Angl. p.* 133. calls *Cochlea maxima, fuſca ſive nigricans, faſciata*. Several of the Shells are filled with a white Spar, which variegates and adds to the Beauty of the Stone. That Spar was caſt in the Shell before this was repoſited in the Maſs of *Marble*, as is demonſtrable from view of this and other like Maſſes. *Conf. Nat. Hiſt. of the Earth, Part* IV. *Conſect.* 2. *p.* 181. *& ſeqq. ſecond Edit.* This is of about the Hardneſs of the white *Genoeſe Marble*.

The ſlender round Scapi of the Pillars of the *Abbey-Church* in *Weſtminſter*, and of the *Temple-Church*, are of this ſort of *Marble*.

So likewiſe are thoſe of the Cathedral Church of *Salisbury*, as I remember; and my Lord *Pembroke* aſſures me poſitively they are. Some Perſons, that are leſs skillful in theſe Matters, fancy theſe Scapi, that occur in moſt of the larger *Gothick* Buildings of *England*, are artificial: and will have it, that they are a kind of fuſil *Marble*, caſt in cylindrick Moulds. Any one, who ſhall confer the Grain of the *Marble* of thoſe Pillars, the Spar, and the Shells in it, with thoſe of this *Marble* got in *Suſſex*, will ſoon diſcern how little ground there is for that Opinion. And yet it has prevail'd very generally. I met with ſeveral Inſtances of it as I travel'd thro' *England:* and had frequent Opportunities of ſhewing thoſe, who aſſerted theſe Pillars to be factitious, Stone of the very ſame ſort with that they were compoſed of in the neighbouring Quarries. *Camden** had entertain'd the ſame Notion of thoſe vaſt Stones of *Stone-Heng*; but is fully refuted by *Inigo Jones*†.

x *b*. 61. *Marble*, of an Aſh-Colour, very hard, and taking a fine Poliſh. It is thick ſet, in all Parts, with *Entrochi* of different Sorts and Magnitudes, and lying in variety of Poſtures. They appear whiter than the reſt of the Stone, by which means they make a pretty Variegation of it, and take as good a Poliſh. From the *Peak* in *Derbyſhire*. Sir *C. Wren*. This is as hard as the *Plymouth Marble*.

x *b*. 62. Black *Marble*, in which are ſeveral Pieces of a white Coralloid Porus lodg'd in different Poſitions, ſo that the Sides of ſome, and the Ends of others appear. They are of ſeveral Sizes; the largeſt near an Inch in Diameter, the leaſt not above one tenth of an Inch. The longitudinal Plates of theſe Bodies are join'd by ſeveral thin croſs Coralloid Septa, paſſing from one to another, and exhibiting a very elegant Texture. The Interſtices are generally fill'd up with a greyiſh ſemi-pellucid Matter, appearing to be Spar. Both the *Coral* and *Marble* take a very fine Poliſh: and the one being white, and the other black, make together a beautiful Compoſition. From . . . . . . in *Wales*. The Tomb of Sir *Thomas Greſham*, the noble Founder of this College, is built of this *Marble*. It is in *Great St. Helen's Church*.

SECT. V. Marmor Silici vel Achati accedens. *Flinty Marble, or that nearly approaches Bodies of the Flint or Agat-kind, in Hardneſs, Politure, and Complexion.*

PREFACE.

THO' Flinty Matter be moſt commonly found formed into Nodules ‡, *yet it is alſo ſometimes found formed into* Strata, *of which there is an Inſtance in* x *b*. 85. infra. *I am not ſure whether the*

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* *In his* Britannia, p. 95.

† Stone-Heng *reſtored*, p. 33.

‡ Conf. p. 33. infra.

Roman *Word* Silex *anſwers exactly to our* Flint. *This is certain, that would ſtrike fire*[x], *was very hard*[†], *and broke ſharp and in Angles*[*] *like our* Flint. *'Twas alſo in Nodules*[‡], *and uſed both in* Italy *and* Greece, *mix'd with other Stone in the Walls of Buildings*[⊖], *in like manner as heretofore in* Kent, Surry, *and other Parts of* England. *But the* Romans *alſo apply'd the Word* Silex *to denote Stone very hard, black, white, and red form'd into* Strata[++].

x *b*. 85. A Maſs of a greyiſh horny Conſtitution, with Streaks of Red in it. 'Tis very hard[†], and ſemidiaphanous; very like the common *Agat*, and gives fire as readily. From the Moulds in *Arkendale, Yorkſhire*. The *Stratum*, off which this was broke, was about 3 Foot thick. I traced it for 20 or 30 Yards in length: and found a like *Stratum*, probably the ſame, at about a Mile's diſtance. I have obſerved *Strata* of this ſort in ſeveral Parts in the North of *Yorkſhire*, interpoſed amidſt *Strata* of a grey Lime-Stone. There is another ſort of it of a dusky Hue, and much like the common black *Flint*. This the Miners there call *Chert*, and *Whern*: The Stone-Cutters of *London*, *Nicomia*. 'Tis ſo hard, that the Picks and Tools will not touch it. It will not ſplit; but breaks irregularly, with a Grain croſs, like that of the common *Flints*. There are alſo in ſome of this natural Cracks, as there are in thoſe.

APPENDIX to CLASS II.

MAſſes of *Marble*, and the finer ſorts of *Stone*, that were originally beat off from the Strata of the neighbouring Rocks and Cliffs down upon the Shores, and there rolled and moved to and again till they were rounded, ſmoothed, and reduced to the Form of Pebles, by the Water of the Sea, or Rivers, when put into Agitation by Tides and Storms; or, by the Waters departing at the end of the Deluge. Alſo of Stones perforated by *Pholades*, and other Creatures. Concerning theſe Bodies, ſee *p*. 25. *infra*.

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[x] Silicis Scintillam excudit—Æneid. I. 178.

[†] Dura Silex—ib. vi. 471.

[*] Acuta Silex. ib. viii. 233.

[‡] Lapis Globoſus. Plin. xxxvi. 22.

[⊖] Plin. ibid.

[++] Plin. ibid. & xxxiii. 4. Virg. Eclog. I. 15. Æneid. vi. 602, & viii. 233.

[†] *Mr.* Hardy, *who has work'd in it, aſſures me 'tis near as hard as* Agat.

EXTRACT.

Porphyry, *_b_. 2.
Micæ _in Marble,_ *_b_. 11. 19.
Marble _vein'd with white_ Spar, *_b_. 11.
Parts of the ſame Maſs of Marble _of different Hardneſs,_ *_b_. 15.
Marble _ſcoop'd and perforated by_ Pholades, *_b_. 19. & ſeqq.
Marble _that takes a Poliſh not inferior to that of_ Agat, *_b_ 9.

PREFACE.

THO' it be true that many of theſe Bodies have been beat out of the Cliffs by the Inſults of the Sea: and ſome of them from off the Rocks there, and afterwards ſmoothed and rounded by the Waves and Action of the Sea on the Shores; yet, becauſe we find ſeveral of Conſtitution very different from the Stone of the neighbouring Rocks, 'tis moſt probable that theſe latter, at leaſt, were Remains of Fragments, broke off from harden'd Strata, _borne thence, worn and rounded by the Force of the Water departing at the latter end of the Deluge; and finally, many of them left, with other Bodies, when the Force of the Water abated. Such indeed are frequently found in the midland Parts,_ (Conf. Claſs 4. Part 1. Pref. infra.) _of moſt Countries, as well as nearer to the Seas, and even to the very Shores, whence they are waſh'd forth by the Agitation of the Sea. See the_ Nat. Hiſt. of the Earth, Part IV. _near the end, treating of the Sea beating Amber out off the Cliffs._

Marble and Stone worn and rounded by the Motion of Water.

*_b_. 1. A Maſs, brown, with a Bluſh of Red; thick ſet with Spots of White. Found on the Shores at _Loo-Beach, Cornwall._

*_b_. 2. Another, little different, only the Ground is of a more dusky Brown. Found amongſt ſeveral others on the Shores at the _Land's-End, Cornwall._ There are vaſt Strata of Stone of like ſort in the Country thereabouts, and particularly in the adjacent Cliffs, from which theſe Maſſes were firſt broke and forced, and afterwards ſmooth'd and rounded by the Working and Agitation of the Sea. This is much like the true Porphyry, both in Colour, Spots, and Conſtitution.

*_b_. 3. Another, the Ground light Red, with numerous Spots of a dark Blue, and ſome few of White. From the ſame Shore.

*_b_. 4. Another, variegated with Red and White; found along with *_b_. 1. at _Loo-Beach, Cornwall._

*_b_. 5. Another, the Ground Red; with Spots, ſome White, others Pellucid. Found in the River _Palmer,_ not far from its Diſcharge into the Sea. _Cornwall._

*_b_. 6. Another, variegated with Red, White, Brown, and Yellow. From the ſame Place.

*b. 7. Two others, variegated with Brown, Red, and White; from the Shores at the *Lands-End, Cornwall.*

*b. 8. Another, the Ground a deep Red; ſpotted and lineated with a bright Red, and White. Found upon the Shores near *Overthorn*, in *Holderneſs, Yorkſhire.*

*b. 9. Another, of the ſame ſort, from the ſame Shore. This is cut, and poliſh'd. 'Tis a very beautiful Stone, taking a Poliſh almoſt equal to an Agat; and ſuperior to any *Marble* I ever ſaw.

*b. 10. Another, the Ground a dark Aſh-Colour, ſpotted very thick with White. Found in the River *Palmer, Cornwall*, along with *b. 5. and *b. 6.

*b. 11. Another, the Ground Brown, with a Caſt of Red, thick ſet with *Micæ* of a white ſilvery Talc; and vein'd with white Spar. From *Loo-Beach, Cornwall.*

*b. 12. Another, the Ground Aſh-Colour; with Veins of a fine White interſecting each other in a very remarkable manner. From the ſame Place.

*b. 13. Another, the Ground Brown, with Spots of a dusky Yellow; vein'd with White. From the Shore near *Overthorn, Yorkſhire.*

*b. 14. Another, the Ground an Iron-Grey; vein'd with Red and Incarnate. Found, amongſt many other like Bodies, on the ſame Shore of *Overthorn*. There is got near *Plymouth* a *Marble* of like Conſtitution with this: and with the Ground and the Veins of like Colour.

*b. 15. Another, the Ground a dark Aſh-Colour; vein'd with White. From the ſame Shores. The Parts of this Stone that are white, ſtand forth ſomewhat above the ordinary Surface of the Stone, as being harder than the reſt, and ſo having better maintain'd themſelves againſt the Attrition theſe Bodies undergo by the Motion of the Sea on the Shores.

*b. 16. Another, the Ground a yellowiſh Brown; vein'd with White. From the Shores of *Lincolnſhire*, betwixt *Skegneſs* and *Ingoldmels.*

*b. 17. Another, the Ground Grey: thick ſet with Veins of White, interſecting one another in a very remarkable manner. From *Loo-Beach, Cornwall.*

*b. 18. Another. This is of a Grain not ſo fine as the reſt: but is variegated and veined with Red, and a very pale Grey, in a very beautiful manner. Found on the Shore, under *Pendennis-Caſtle, Cornwall.* There is among the reſt, a *Stratum* of Stone of this ſort in the neighbouring Cliffs; whence this doubtleſs was beaten.

*b. 19. Another, of an Aſh-Colour; thick ſet with *Micæ* of a white ſilvery Talc. It is ſcoop'd and perforated by *Pholades* or ſome other like Fiſh. Found, among a vaſt many others, on the Shores betwixt *Workington* and *Whitehaven, Cumberland.*

*b. 20. A dark-grey Maſs, found on the Shores of *Lincolnſhire*, betwixt *Skegneſs* and *Ingoldmels.* 'Tis of an oval Form, about two Inches long, and one and a quarter over. 'Tis perforated in all parts of it, and thorough the whole Body of the *Stone,* the Perforations running into, and communicating with one another. They are ſo very numerous, and thick ſet, that they take up as much ſpace as the Subſtance of the *Stone* that parts them does. The largeſt of them are capable of receiving a Vetch; but there are others leſs, in all degrees. There's one part of it ſomewhat more free from theſe Perforations than the reſt of the Body. The Planks of Ships are frequently perforated in this manner: only thoſe Perforations are commonly larger. And the Shells of Oyſters *, and other like craſs Shells, are frequently found eroded and pierced in all Dimenſions, and ſometimes full as much as this *Stone,* by a ſort of Worm. I do not undertake to determine whether this, and other like perforated ſtoney Maſſes, be ſo wrought by Inſects: but 'tis certain the *Pholades* work themſelves into, and perforate *Stones* as hard as theſe. About *Weymouth* there are grey and white *Stones* much bored and ſcoop'd by *Pholades.* Mr. *Robert Ball* tells me he ſaw *Marble,* cut into form of Pillars, taken up at Sea, off *Leghorn,* that was ſo much ſcoop'd and hollow'd by *Pholades,* that 'twas ſpoil'd, and render'd of no Uſe. 'Twas of the common white *Carara Marble:* and had been caſt away, and lain in the Sea, about ſixty Years. He alſo aſſures me the red Coral, dragg'd up on the Coaſts of *Italy* and *Spain,* is often found perforated and eroded by Worms under Water. The true *Purpura,* of which we have not in *England,* bores Holes in Shells to get at the Fiſh. Vide *Cat. of the Exotic Foſſils, part* 2. *ſ*. 121. 'Tis worth Inquiry whether the ſaline Steams of the Sea have not ſome ſuch Effect upon the *Stones* on the Shores. The Author of the Obſervations, *Philoſ. Tranſact. N.* 27. *p.* 495. acquaints us, that " on the " Point *Cagna,* the Iron Guns at the Fort were ſo corroded, that " ſome of them were become near uſeleſs, being perforated almoſt " like Honey-Combs." This he aſcribes to the Salt Steams ariſing from the Sea.

* *b.* 21. Another of a whitiſh Colour. 'Tis perforated in like manner as the precedent: only the Surface of a conſiderable part of it is not near ſo much perforated as the reſt of the Body. Found on the ſame Shores. Mr. *Morton.*

* *b.* 22. Another of a pale brown Colour. On only one ſide this is perforated or ſet with Pores, generally oblong, ſmaller, and fewer in number, than in either of the former. The Surface of this is pretty ſmooth. Each Pore is environ'd with a ſmall white

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* *See Mr.* Azout's *Obſervations on the Worms in Oyſter-Shells,* Philoſ. Tranſ. N. 12. p. 204.

In Vermibus qui in præduris Scopulis gignuntur, quique ſuas ſic complent Cellulas, ut ipſæ cum Animalculis amplientur: aliæ aliis ſunt majores, & nulla eſt Cellula quam non repleat Vermiculus, qui eam incolit: adeo ut interiores ejus Cellulæ Parietes exedere, & ejus velut Raſuris ali videatur. *Du Hamel Phyſ. vet. & nov. Pars* 3. *Diſ.* 2. *C.* 5.

Circle, and that with a brown, darker than the common Colour of the *Stone*. Mr. *Morton*. From the ſame Shores.

★*b*. 23. Another, of a darker brown, perforated in all parts of it. Found on the Shores near *Sunderland* in the Biſhoprick of *Durham*.

★*b*. 24. A Maſs of a brown Colour, variegated with ſeveral Lines one within another, alternately of a lighter and darker brown, ſo as together chiefly to compoſe an Oval very much reſembling a Knot in a Piece of Wood. In a large part of it are ſeveral ſtreight, round, tapering Perforations of ſeveral Sizes, from $\frac{3}{4}$ of an Inch over in the biggeſt part, to about $\frac{1}{20}$ of an Inch. Theſe are generally encompaſs'd with Circles of a pale brown Colour, near $\frac{1}{10}$ of an Inch thick: Some of theſe Perforations are fill'd with ſmall Cryſtals. Found on the *Strand* near *Harwich-Cliff*.

**b*. 25. A Maſs of a pale brown Colour without; within 'tis white with a gloſſy Luſtre, like that of ſome ſorts of Spar. Upon breaking it, I found ſome ſmall Cavities in it, from the ſides of which ariſe ſeveral ſmall cryſtalline Columns, hexangular, pointed, and very tranſparent. On one part of the *Stone* there appears a Caſt of Red. Found on the Top of an Eminence, near *Dorcheſter, Oxfordſhire*. Before I broke it 'twas ſmooth on the Outſide, and appear'd to be worn, and rounded by the Motion of Water. There were ſome other like Maſſes, which, being broke, ſhew'd themſelves to be only Spar out of ſome Vein or Fiſſure of a Stratum, whence they were born by the departing Water at the End of the Deluge. There was no appearance of any Fiſſure near.

**b*. 26. A Maſs of a dusky Iron Colour, the Surface ſmooth'd by the Motion of the Water. From . . . . . . in the *Peak, Derbyſhire*. This may ſerve well for a Touchſtone.

**b*. 27. A green Maſs, ſurrounded, in one part with a Zone of a pale yellow. From the Shores of *Outhorn, Yorkſhire*.

CLASS III.

Pebles, Flints, Agats, and Stones related to them. Vid. Pref. to Cl. 3.

EXTRACT.

A gritty Peble, *c*. 226.
A plated Peble, *c*. 209.
Cruſtaceous Pebles, *c*. 37, *& ſeq.*
Semipellucid Flints and *Pebles*, *c*. 19. 20. 21. 22. 26. 27. 30. 31. 32.
Pellucid Pebles, *c*. 12. 14. 15. 18. 25. 34. 37.
Cryſtalline Flints, *c*. 12. 13.
Flints with Undulations on their Surfaces, *c*. 251. *251.

Ætites or *Eagle-Stone, c.*258, *& ſeq.*
*Onyx, c.*148.
*Agats, c.*41.130.144.
Mocho-Stones, c. 21. 22. 146.
Small Nodules out of a Stratum of Shiver, *c.** 11.
Piſolithi, c. 11.

C. 1. *Obſervations and Reflections.*

Of the *Silex* of the Antients, *Vid. Pref. to Sect.* 5. *Cl.* 2.

Of the *Silex* of the *German* Naturaliſts, *Conf. Pref. ad Lud. Helmont. C.* 4.

Pebles and *Flints* are natural Nodules; and were all originally covered with a Film or Cruſt, *Vid. Pref. ad Cl.* 3.

Some of them had that Cruſt worn off by an Attrition, cauſed by the rapid Motion of the Water, retreating toward the Sea and the Abyſs, at the End of the Deluge, *c.*227. *Vid. App. to Cl.* 2.

Others, found upon the Shores, have had their exterior Cruſts fretted off by the Agitation of the Sea, *Vid. Pref. ad Cl.* 3.

Pebles, Flints, and Bodies of the *Flint-kind*, have no Grain, as the Workmen ſpeak. Nor will they be brought to ſplit in any determinate Direction; but break irregularly and uncertainly, *Vid. Pref. ad Cl.* 3.

Pebles and *Flints* are compoſed chiefly of *Cryſtal*; and owe their various Colours to the various Admixtures of Stoney, Mineral, or Metallic Matter, that is incorporated with the Cryſtallin. *Vid. Pref. ad Cl.* 3.

From thoſe various Admixtures they have obtain'd various Names, as Agats, Cornelions, Onyx's, *&c. Vid. Pref. ad Cl.* 3.

Cryſtalline and *Pellucid Pebles* and *Flints*.

Cryſtalline Shoots in the Cavities of Flints and Pebles, *c.** 243.

Flint, with Bubbles, of a ſemipellucid or corneous Conſtitution, and ſtriated like the *Hæmatites, c.*263, *& ſeq.*

Cretaceous Matter in the central Cavities of Flints, *c.*258.

A *Peble* ſeeming to have been compreſs'd or reſtrain'd during the time of its Coalition by ſome outward Force, *c.*226.

Small *Pebles* immers'd in a Maſs of flinty Matter, *c.*4.

Several *Pebles* united in the ſame Maſs by means of a natural Ferruginous Cement, *c.* 1, *& ſeq.*

Pebles immers'd and lodg'd in Strata of Stone, *c.** 3. 13.

The *Pebles*, now incloſed in ſolid Strata, were all originally looſe, ſingle, and ſeparate, *c.* 17.

Of the Origin and Formation of *Pebles, c.* 37. 45. 227.

Of the Cracks in *Flints*, x *d.*40.

Flinty Matter ſometimes form'd into Strata, as well as into Nodules, *Vid. Pref. ad Sect.* 5. *Cl.* 2.

Maſſes of *Marble*, rounded, and worn into the Form of Pebles, by the Agitation of the Sea, to be diſtinguiſh'd from the true Pebles, *Vid. Ap. to Cl.* 2, *& ſeq.*

C. 2. *Of the Uſes of the Bodies of this Claſs.*

Agats, &c. for Heads of Canes, Hafts of Knives, *&c.*
Flints uſed in Building, *Vid. Pref. ad Sect. 5. Cl. 2.*
Pebles and *Flints* uſed for Pavement.
Small *Pebles* incorporated and cemented together by a gritty Maſs uſed for Millſtones, *c. 1.*

Pebles, Flints, Agats, and Stones related to them.

PREFACE.

CAlculi, *Pebles. Under this Title I intend Bodies of very various Colours: and ſomewhat of the Conſtitution of Spar, but much harder; breaking irregularly and uncertainly.*

Silices, *Flints. Bodies of various Colours, but ever with a corneous Ground: and harder than* Pebles; *but breaking irregularly as thoſe do.* Agats, Cornelians, Chalcedonics, Onyxes, *and* Mochoes, *are no other than* Flints: *but finer than the Common; and have obtain'd thoſe different Names from certain Differences in their Colours.*

The true Flints, *and* Pebles, *are all natural Nodules: and, many of them, were originally cover'd with a thin exterior Film or Cruſt,* (Conf. c. 37. a. to c. 37. h. & c. 89. infra) *that uſually differs in Colour, Hardneſs, and Conſtitution from the interior Subſtance of the Body *. This was their firſt State before they were repoſited in the Strata †. Since which time ſeveral have been broken by ſome accidental Force: and others, tho very rarely, becauſe of their great Hardneſs, have been worn, and had their inveſtient Film fretted off by the Agitation and Motion of the Water, of the Deluge returning,* (Conf. Append. to Cl. 2.) *of the Sea, and of Rivers. But theſe, tho thus alter'd, may be judged of by their internal Conſtitution; and by their Hardneſs. Theſe two Teſts alone ſufficiently diſtinguiſh them. As to their Form, they have that in common with the* Pyritæ, *and other Nodules: and indeed with certain ſmall Maſſes of Stone, and of Marble, that are frequently found upon the Shores of the Sea, and of thoſe Rivers that are impetuous, and their Water much agitated by Tides and Storms. Theſe have indeed the Form* of Pebles, *but not, ordinarily, either their Hardneſs or Conſtitution; and are never inveſted with a Film or Coat. They ſplit regularly, and with a Grain like ſeveral Bodies that are lodged in Strata; which the true* Flints or Pebles *never do. In a word, they are only Fragments, beat off from the Strata of* Stone *and* Marble *in the neighbouring Cliffs; and worn into that Form by the Waves and Water. Of theſe there are Inſtances in the Appendix to the ſecond Claſs; as alſo of thoſe that were ſmooth'd and rounded by the Water, departing, at the end of the Deluge.* Conf. c. 167. infra. & c. 227. infra.

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* *Of the Cruſts of the* Ludus Helmontij, vid. Claſs 4. part 3. xd. 25. *Of the Cruſts of* Amber, g. 47. 9. 48. infra. *Of* Pyritæ, h. 36. & h. 40. h. 45. *Of* Geodes, Mineral Bezoar, Ætites, o. 102. † o. 1, & ſeq.

† Vid. *Natural Hiſtory of the Earth,* Part 4. Conſ. 23.

Pebles, Flints, Agats, *and all other Stones of the* Flint-kind, *are compoſed of Cryſtal; but ordinarily with an Admixture of Stoney, Mineral, or Metallic Matter amongſt it. Some* Pebles *there are that conſiſt intirely of pure Cryſtal: and the more tranſparent and fine* Flints, Agats, *and the like, owe that Tranſparency to the Cryſtal in them. Thoſe that are more Opake, have leſs of this; and more Mineral, or Metallic Matter in them. 'Tis to this that the brighter Colours, Red, Yellow, Blue,* &c. *are chiefly owing.* Conf. Cl. 11. c. 82. infra.

Of flinty Matter formed into Strata. Vid. Pref. ad Sect. 5. *Cl.* 2.

When I came to review this Claſs, I found in it a conſiderable number of Bodies that exhibited nothing particularly obſervable or uncommon. All theſe therefore I have rejected; being not willing to incumber this Collection with Repetitions, and Things that exhibited nothing new, or different from the reſt.

The Bodies of this Claſs being numerous, and ranked in haſte, they are not in ſo good Method as was to have been wiſh'd. Then there are ſome Bodies in it, that a more careful Attention has taught me, do not properly belong to this Claſs; which I have noted in the Accounts of them.

Pebles, Flints, Agates, and Stones related to them.

c. 1. Small Pebles, from the bigneſs of the Seed of *Rape* to that of a common white Pea, ſome pellucid, others white, others brown, black, *&c.* all incorporated into one Maſs, and cemented naturally together by a ſort of ferruginous Matter. This is uſed for Mill-ſtones. From ——— in the *Peak, Derbyſhire.*

c. 2. Another Maſs, but the Pebles moſt of them much larger, and of different Colours. They are cemented together alſo by a ſort of dark brown ferruginous Matter. In ſome parts of the Maſs, the ſaid Matter is formed into Cruſts not unlike thoſe of the *Bezoar* Mineral: and there are Veins of it running upon the Surface of the Pebles, and Flints, which (in this) are mix'd amongſt the Pebles. Found near *Southampton.*

c. 3. Another Maſs of *Iron-ſtone,* of a dusky red Colour, in which are eight or nine browniſh-white Pebles, about the bigneſs of Wall-nuts. *Banſtead-Downs,* near ——— *Surrey.*

c. * 3. Another like Maſs, with reddiſh Pebles in it, from *Whitehaven.* There are vaſt Maſſes of an hundred Weight and bigger, of this Matter, containing theſe Pebles, found lying in *Strata,* of Grey Stone in the Cliffs and on the Shores there.

c. 4. Pebles, white with a brown yellow, from the bigneſs of an Horſe-bean to that of a Nutmeg, cemented together by a grey Flinty Matter, with very ſmall red, black, yellow and white Spots; perhaps they may be ſmall Pebles. The whole is cut into an Oval Plate, and that poliſhed, both the Pebles and Cement taking a very good Poliſh. Here was a double Proceſs; firſt of the Formation of the ſmall Pebles; and next the Coalition of the Flinty Matter, that united and cemented them into one Nodule. From —— near *Barkhamſtead.*

c. 5. Another Oval-Plate, in which the Pebles are ſome of them of about the bigneſs of an Horſe-bean, the reſt generally leſs. They are black, white, grey, yellow, and variegated. The Ground, or Cement, pale-grey, with a Caſt of yellow in ſome places. The whole takes a fine Poliſh, and 'tis a very beautiful Stone. *Barkhamſtead.*

c. 6. Another like Plate, the Pebles much of the ſame bigneſs with thoſe of the foregoing: moſt of them are black, the reſt grey. The Ground or Cement is of a browniſh yellow Colour. It takes a fine Poliſh, and the whole is very elegant. *Conf. N. c.* 7. *infra.*

c. 7. The Stone, off which the precedent Plate was cut. 'Tis a large Nodule of a compreſs'd round Shape, the Surface pretty ſmooth, the whole outwardly appearing like a yellowiſh Peble with black Spots. Found in a Gravel-Pit on this ſide *Tatnum-Court,* along with *N.* 263. *infra.* The Surface of this, rightly conſider'd, ſhews it to have been rounded, worn and ſmooth'd by the Motion of the Water. *Conf. Appen.* to *Cl.* 2.

c. 8. Pebles of much the ſame Sizes with thoſe in the three foregoing. They are white, with ſome degree of tranſparency. They are held together by a brown Cement. The whole is of a flat oval Form, about two Inches long. The Surface is worn and ſmooth'd, but not quite ſo ſmooth as that of the former: but it takes a fine Poliſh. *Hempſtead, Hertfordſhire.*

c. 10. Many ſmall white Pebles, with a few black, held together by a red Cement. The Surface of the whole very ſmooth. Found in the North-field of *Draycote,* on that ſide towards *Riſly,* in *Derbyſhire.*

c. 11. Many ſmall Stones, generally about the bigneſs of Peaſe, and flattiſh, held together by a pale-brown coarſe Cement. From —— Hill in the Road between *Cirenceſter* and *Glouceſter.* There is a vaſt Quantity of this ſort of Maſs in the ſaid Hill; and, on the Sides of it, prodigious Numbers of the ſame ſort of ſmall Stones, looſe, and diſengaged from the Cement. Perhaps theſe may be of that ſort that the Antients call'd *Piſolithi.* There is a piece of a ſtriated Pectunculus incorporated in this Maſs. "Near ——— a Se-

" pulchral Monument, ſhewn for *Rachel's* Tomb, *Gen.* 35. 19. not " far from *Bethlehem*, in *Judæa*, are found a ſort of ſmall round " Stones exactly reſembling Peas." Mr. *Maundrell's* Journey from *Aleppo* to *Jeruſalem*. p. 86. *Strabo* Geogr. l. 17. p. 808. *d.* takes Notice, that in *Egypt*, near the Pyramids, there were Heaps of the Chippings or Hewings of Stone. [λατύπης σωροί τινες] And in theſe were found Stones of the Shape and Bigneſs of Lentils. [Ψήγματα καὶ τύπω καὶ μεγέθει φακοειδῆ.] The fancyful Tradition of the Inhabitants concerning theſe was, that they were of the Remains, of what were wont to be eat by thoſe that work'd in Building the Pyramids, in tract of Time turn'd into Stone. He obſerves alſo that there were plenty of theſe *Lenticular Stones* on an Hill, where he dwelt, in *Pontus*, ib. *Plin.* l. 36. c. 12. p. 654. *b. agens de Pyramid. Æg.* — " Harena late pura circum, lentis Similitudine, qualis in " majori parte *Africæ*."

c. * 11. Small Nodules, ſome round, others oval, of a dusky grey Colour; found in a Stratum of Shiver, in *Arkendale*, *Yorkſhire*. The biggeſt of theſe do not much exceed the Size of the common Bean: and there are ſeldom larger found.

c. 12. A Flint perfectly pellucid, of a lenticular Form, the longeſt Diameter about an Inch and a Quarter. The Surface is very ſmooth and polite. This was given me for *Engliſh*; but I have forgot where 'twas found: and the Perſon that gave it me is now dead. There are ſaid to be of theſe Stones found ſomewhere about *Briſtol*. Dr. *Liſter* has deſcribed and graved ſome of them. *Philoſ. Tranſ. N.* 201.

c. 12. *a.* A Cryſtal, or pellucid Flint, wrought into an orbicular Form, found ſomewhere in *England*. This is of that ſort that is call'd *mineral Pearl*: and probably the ſame mentioned by *Suetonius*, in *Cæſare*, §. 47. " Britanniam petiſſe ſpe margaritarum, " quarum Amplitudinem conferentem, interdum ſua manu exegiſſe " Pondus."

c. 13. Another Cryſtalline Flint, of an oblong Form, * the Baſis near flat, the upper Part terminating in a Ridge. The Baſe, and Sides are not plain, but ſomewhat ſwelling and convex. 'Tis regular and polite, as if wrought by Art. *Conf.* N. 12.

I have ſince ſhewn this to ſome Lapidaries; who agree that this Body is cut and poliſhed. 'Tis part of a Cryſtalline Nodule. There's one of this Figure ſet forth by Dr. *Liſter*, *Phil. Tranſ.* N. 201. who thinks thoſe *naturally Poliſhed*, but erroneouſly: 'tis very probable all theſe Bodies were us'd for Ornaments among the ancient *Britains*. Mr. *Aubrey* was wont to aſſert they were us'd in Magick by the *Druids*: and I believe intimates ſome ſuch thing in his Natural Hiſtory of *Wiltſhire*; for which he had made Collections. They are now in two Volumes MSS. in the *Aſhmolean Muſæum* in *Oxford*. In his Miſcellanies, 8vo. *Lond.* 96. p. 128. c. 15. he mentions a Cryſtal Sphere, or Mineral Pearl, uſed by

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* See Dr. *Plat's* *N. H.* of *Staffordſhire*, p. 178.

Magicians: and to be inſpected either by themſelves or by a Boy. Mr. *Webſter* in his Book of Witchcraft alſo treats of theſe Bodies. c. 16. p. 310. & ſeqq. This was found near *Barkhamſtead:* and made uſe of, as Mr. *Steel* informs me, by the late Dr. *Woodhouſe*, there, as a Magical Speculum, he pretending that a Spectrum was wont to diſcover it ſelf to him in it. Mr. *Steel* fancies the Glaſs, as 'twas call'd of Dr. *Dee*, and Mr. *Kelly*, mention'd by Dr. *Meric Caſaubon*, was of this ſort. For my own part I can imagine theſe to be nothing other than Baubles, uſed formerly as Ornaments by the *Britains*, while Savage, and before the acceſs of the *Romans*. Mr. *Morton* found one of this ſort in *Kettering-Field*, *Northamptonſhire*.

c. 14. A Peble, about the bigneſs of a Wallnut. 'Tis wholly pellucid. From .... *Oxfordſhire*. This kind the Lapidaries call *Peble-Cryſtal*. The Cryſtallin hexagonal Columns they call *Sprig-Cryſtal*.

c. 15. Another, ſomewhat leſs, alſo pellucid. *Ibid.*

c. 17. 4. Pellucid Pebbles about the bigneſs of Peaſe. One of them I got out of a gritty Stone, made up chiefly of ſuch Pebles, cemented together, near *Worceſter:* the other three out of a reddiſh gritty Stone, much like that *N.* 1. *infra*, near *Belpor* in the *Peak*. There are vaſt Quantities of that ſort of Stone about *Belpor*, *Workſworth*, and the Places thereabouts in the *Peak*. It lies in Strata. There are mighty Rocks of the ſame ſort about ...... in the Forreſt of *Dean* in *Gloceſterſhire:* and the Pebles and Flints, contained in them, are of all Sizes, little and large. Their lying thus in Strata is a Proof that the Pebles and Flints were ſingle, independent and apart till after the ſubſidence. When the Matter ſubſided down with them, and ſettled in the Intervals of them, conſolidating, became a Cement to hold them together.

c. 18. A Cryſtallin Flint, cut Diamond-wiſe. 'Tis of a clear Water, and fine Poliſh. 'Twas found in a Field near *Croydon*, *Surry*.

c. 19. A light grey Semi-pellucid Flint. 'Tis of much the ſame Complexion with the common *Indian Achate*. On one Part of the Surface 'tis thick ſet with Tubera like ſmall Bubbles. Found in a Gravel-Pit, near *Kentiſh-Town*. *Vid. N.* 263. *infra*.

c. 20. A piece of the foregoing cut into an oval Plate, and poliſh'd.

c. * 20. A Plate of an *Agate*, no ways inferior to the fineſt oriental *Agate*, and nearly approaching the white Cornelian. There are in the horney Ground two white Lineations; attended with two of a pale Red, not diſcernible unleſs held up to the Light. The Stone, off which this was cut, was found near *Gaddeſden magna*, *Hertfordſhire*.

c. 21. Three round Plates, cut out of a Flint, approaching the nature of an *Agate*, and indeed very much reſembling thoſe *Agates* call'd *Mochoa-Stones*, with Appearances of Shrubs in them. The Stone, off which theſe Plates were cut, was found near *Stratford* in *Eſſex:*

and, having in it a ſtriated *Concha Anomia*, is exhibited in the 2d Part of this Catalogue, of the extraneous *Engliſh Foſſils*, *f.* 346.

c. 22. A Semi-pellucid grey Flint. In the Body of it are white Plates or Flakes, uſual in ſome of the *Indian Achates*, which this reſembles and equals in all reſpects. 'Tis cut, and poliſh'd. Found by the *Thames* ſide, on *Lambeth* Shore.

c. 23. A Flint much like that N° 19. only ſcarce ſo clear. *Tatnum-Court*, *Middleſex*.

c. 24. Another of like ſort: only one part of it is of a browniſh white Colour, and Opake. Broke off a Flint on *Sydenham* Common, *Surrey*.

c. 25. A pellucid Peble, with a faint Eye of Green. 'Tis about the bigneſs of a Nutmeg. There appear in it ſeveral long round Bodies of the thickneſs of ſmall Pins. They are placed at uncertain diſtances, but near parallel to each other, and run ſlanting a-croſs the Peble, which is a little flattiſh, and both ends of them terminate in ſmall holes at the two oppoſite Flats of the Surface of the Stone. They are of a green Colour, and appear very plainly and diſtinctly in the Body of the Peble. Found on the Shores near . . . . . . in *Cumberland*.

c. 26. Another Peble, red and ſemi-pellucid, leſs than the foregoing. There are in this ſeveral Columns, little different in any reſpect from thoſe of that, only they are white. Found on the Sea-ſhore, near . . . . . in the Biſhoprick of *Durham*.

c. 27. A Peble of the bigneſs of a Nutmeg, white, with fine ſtreaks of red on the Surface, and thorough the Subſtance of it. 'Tis ſemi-diaphanous, and takes a fine Poliſh. Found on Plow'd Lands a little beyond *Henley* upon *Thames*.

c. 29. A Peble of a flat oblong Shape, ſomewhat bigger than an Horſe-bean. The Surface of it is ſmooth and very fine. 'Tis opake, and of a dark green Colour. Found with *N.* 26, & 27.

c. 30. A ſmall Peble, ſemi-diaphanous, yellowiſh, with ſlight ſtreaks of a ſomewhat darker Colour. Found on the ſame ſhores.

c. 32. A *Peble*, ſemi-pellucid, browniſh, with Spots of a whitiſh hue. On one ſide is a Cavity, the ſides of which are beſet with a Cryſtalliz'd Spar. Found on the ſame Shores.

c. 33. Another Opake, its Surface finely variegated with Spots of a Fleſh-colour, a dark red, and ſtreaks of white. The ſame Shores.

c. 34. Another, very tranſparent. In the Center of it is a fine Cloud of red. The ſame Shores.

c. 35. Another, the out parts pellucid, the middle opake, and of a very bright red. From the hither Edge of *Blackheath*, near *Deptford*.

c. 37. A grey *Peble*, pellucid, having on one Part very many thin white triangular Cruſts, one within another, appearing like a Neſt of triangular Boxes ſet one in another. From the ſame Shores.

*37. Another whitiſh with a Caſt of red; having many like Cruſts in it. From the Shores near *Whitehaven* in *Cumberland*. Theſe Cruſtaceous *Pebles*, *Flints*, and other Nodules of like Con-

ſtruction,

ſtruction, particularly the native *Bezoar* mineral, *Geodes*, &c. The Beginning or firſt Advances towards a Formation, was by the Congreſs of certain of their conſtituent Corpuſcles at one Place or Punctum, where they formed a Nodule. Other Matter ſucceeding towards the ſame Point, on all ſides the Nodule, and affixing upon it, ſtill augmented the bulk of it. When it ſo fell out, that this Matter was of the ſame ſort with that that concurred before to form the central Nodule, there could be no variety of Colour, or Conſiſtence, from this or any more like Additions that were made to it. And 'tis highly probable that all the Nodules, that conſiſt of one uniform Subſtance, were as well formed thus, beginning from a Point or Center, as the cruſted ones: Nay, and moſt of the ſpotted, variegated and clouded ones too, and all others, however mix'd and variegated, or how different Matter ſoever might concur to the forming them, and indeed all whatever except thoſe that are tabular and plated, of which *vid. c.* 209. *Cl.* 3. But where the ſaid ſucceeding Matter was not of the ſame ſort with that of the central Nodule, 'tis diſtinguiſhable by its Colour, or Conſiſtence, and appears upon breaking or cutting the Body, as a Shell or Cruſt encloſing the central Nodule. Again, other Matter ſtill ſucceeding, and applying it ſelf on all ſides quite round this firſt Shell or Cruſt, where 'twas of a different ſort, it conſtituted a ſecond Cruſt covering the former. A third application of different Matter conſtituted a third Cruſt: and ſo on, as long as a ſucceſſive Application of different Matter continued.

The thickneſs of *each Cruſt*, is greater or leſs, as the Quantity of Matter ſo ſucceeding to form it was greater or leſs.

The ſame Cruſt is in all Parts of the ſame thickneſs, when there happened to be an appulſe of an equal Quantity of Matter on all ſides the Nodule, or, if there were ſuch before incruſted round it, the interior Cruſts*. But where the Quantity of Matter ſo applying it ſelf was unequal, and more on one ſide than another, there the Cruſt, form'd of it, is of different thickneſs in different Parts; which is frequently obſervable in the Cruſts of Nodules. Hence 'tis that we commonly find the central Nodule not in the middle, but approaching nearer one ſide of the Stone. Of this there are Inſtances *infra*.

Where the Matter that formed any ſingle Cruſt was homogeneous and all of the ſame ſort, the Cruſt is uniform and of the ſame Colour and Conſiſtence: but where 'twas different, the Cruſt formed out of it differs in Colour or other ways. This is the Cauſe of all the Varieties obſervable in the ſame Cruſt.

Where the Matter that ſucceſſively applied it ſelf to the Nodule in its Formation was on one ſide homogeneous and entirely of the ſame ſort, on the other ſide of different ſorts; the Stone formed of ſuch, would be on one part uniform, on the other cruſted with half Cruſts or Hemiſpheres.

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* *Of this c.* 37. *a. c.* 37. *c. d.* and *e. are Inſtances.*

Where the central Nodule was globular, the inner Surface of the firſt Cruſt would be Spheric; and if the Cruſt was in all parts of the ſame thickneſs, that whole Cruſt would be Spherical. But if the Surface of the central Nodule was inequal and irregular, the Cruſt formed upon it would be ſo likewiſe. So alſo for the ſeveral ſucceeding Cruſts each without the other.

If the Matter whereof the ſeveral Cruſts were formed happen'd to differ in Diaphaneity, Colour or ſeveral other Reſpects, yet agreed in Hardneſs, Figure and Diſpoſition to unite and conſolidate, the ſeveral Cruſts would cohere and form one common Solid, as they do in *Flints*, *Agats*, and the like. But if the Matter of the ſeveral Cruſts happened to be of different Conſtitutions, ſuch as indiſpos'd them to unite, then they part and ſeparate upon breaking the Stone, as is obſervable in the Native mineral *Bezóar* and *Geodes*.

c. 37. *a.* A piece of a Flint, broken off to ſhew the interior Conſtitution of it. 'Tis of an oval Figure. In the Center of it is an oblong blackiſh oval Spot, which is ſurrounded with a Line of brown; and that encompaſs'd with a Line of white: the white with another of brown: and without all is a pretty thick Cruſt of white. The others that I call Lines are indeed ſo many Cruſts, contained in one another: all of them paſſing the Subſtance of the Stone, and being conſpicuous in the ſame Manner and Order on the oppoſite Face of it; only the ſecond Section is not thorough the central Nodule, but thorough the firſt Cruſt. In this Stone, the central Nodule has its Surface pretty ſmooth and regular: and the ſeveral Cruſts about it are, in all parts, of nearly the ſame uniform thickneſs. *Hamſtead-Heath.*

c. 37. *b.* Another *Flint*, likewiſe broken. In the Center 'tis brown: round that is a Circle of white: then one reddiſh mixt with white: after that, a very thin one of black: and laſtly, a Cruſt of white. *Hamſtead-Heath.*

c. 37. *c.* A coarſe *Flint*, of a triangular ſhape, broken alſo. 'Tis of an Aſh-Colour, only about $\frac{1}{4}$ of an Inch from the Surface is a triangular Line, about $\frac{1}{20}$ of an Inch over in all Parts of it, of a reddiſh brown Colour. This lay near the former. I broke a vaſt many of the Stones thereabouts, and found them of like Conſtruction; conſiſting of Cruſts one within another.

c. 37. *d.* A *Flint*, broken. The middle part is of a pale brown Colour. Next that is a Cruſt of white: then a Cruſt of dark brown: and without all a thin Skin of white. The two Cruſts, and Skin, are each in all Parts of them nearly of the ſame thickneſs. *Cane-Wood*, near *Highgate*.

c. 37. *e.* Another. In the middle is a large round Spot of grey with a Caſt of green. This is ſurrounded with a pretty broad Circle of yellow. Without all is a Cruſt of brown. The Surface of the central Spot or Nodule is pretty ſmooth and regular: and the two Cruſts (for in reality that, which with ſuch a Section of the Stone appears only as a Circle, is part of a Cruſt) about it in all Parts of near the ſame thickneſs. *Newington-Green*, *Middleſex*.

c. 37. *f.* Another. In the middle is a Spot of a Grey, pellucid, or horney Conſtitution. Without that, is a thick Cruſt, opake, and of a pale brown Colour. Found in a Corn-field near *Northfleet, Kent.*

c. 37. *g.* A ſmall *Flinty Peble*, broken ſo as to diſcover the interior Conſtitution of it. In the Center is an oval white Spot, as it appears in the Plane of the Segment of the Stone, but is indeed a Nucleus. Round this appears a blackiſh or rather a deep grey oval Ring, which is an oval Cruſt, including that Nucleus; 'tis about $\frac{1}{30}$ of an Inch thick. Without this is an oval Ring or Cruſt of white, like that of the Nucleus, $\frac{1}{10}$ of an Inch thick. Laſtly, without all, is an oval Cruſt of the ſame deep grey again $\frac{1}{8}$ of an Inch over. Found in a Gravel-Pit in St. *George*'s-Fields, *Southwark.*

c. 37. *h.* Another broken in like manner. In the Center is a red oblong Nucleus. This is inveſted with a black Cruſt. That Cruſt is ſurrounded with a grey Cruſt. Then a black Cruſt again: next a grey; and ſo on to the Surface alternately; there being in all eight of theſe Cruſts, *viz.* four of each Colour. The Cruſts are each in all Parts nearly of the ſame thickneſs, their Figure ſuited to the Nucleus, and the outer Surface of the Stone exactly of the ſame Form with that of the Nucleus.

c. 38. Another almoſt opake, but thick ſet with Cruſts of various and uncertain Figures encompaſſing one another. Found near *Malden*, in *Eſſex*. Mr. *Buddle.*

c. 39. Another with like Cruſts. This is ſomewhat more tranſparent, and one half of it has an Eye of red. From the Shores of the Biſhoprick of *Durham.*

c. 40. Several like pellucid, lineated or cruſted *Pebles*. Some of them are beſides ſpotted and ſtreaked with red, yellow, and white. Found in ſeveral Places on the ſame Shores.

c. 41. A black *Flint*, cut and poliſhed. In the middle of it are ſeveral Lines of grey and white alternately, which appear very beautiful and fine, eſpecially as being ſo beſet and environ'd with black. *Graveſend, Kent.*

c. 42. A *Flint* elegantly diverſify'd with Stripes of a dark brown near black, and grey, alternately. The darker Stripes are not ſo broad as the grey ones. *Shooters Hill, Kent.*

c. 43. A Plate cut off the foregoing, and poliſh'd. It takes a good Poliſh: and being held betwixt the Eye and the Light, the darker Stripes appear to be tranſparent.

c. 43.* A Plate off an *Agate*, with a Series of Stripes, white and blackiſh alternately, paſſing the middle of it. *Gaddeſden magna, Hertfordſhire.*

c. 44. A *Flinty Peble*, the Ground grey, with an Eye of green, ſtriped with white and yellow. It takes a good Poliſh. *Greenwich Park.*

c. 45. Another, the Ground much the ſame, but in ſome Places clouded with yellow. 'Tis ſtriped with red and white. The

Stripes run round into an oblong oval Form, and environ one another. Indeed they are properly Cruſts within one another, and ſeem to be made by a ſucceſſive Application of different Matter as it came to hand in the Formation of the Body, beginning at the Center, and ſo concreting and cruſting ſucceſſively Cruſt upon Cruſt, the diverſity of the Matter that came on in courſe, cauſing the diverſity of Circles and Colours. Found in the Road near *Bromly* in *Kent*.

c.46. A Plate cut off the foregoing Stone, and poliſh'd, with good Succeſs.

c.47. A *Flinty Peble* black without, lineated within with Stripes of white, yellow and red, encircling one another, the innermoſt ſurrounding and including a dark blue Spot. Found in the Road near *Deptford*.

c.48. A Plate cut off the ſame, and poliſh'd with good Succeſs.

c.49. Another Plate having a Spot of blue near the middle of it, and that ſurrounded with red and white Stripes alternately. On one ſide is a Line of yellow. It has taken a good Poliſh. This was cut off a very large Flint Peble, found on *Hamſtead-Heath*.

c.50. A Plate beautifully ſtriped and clouded with Purple, dark red, and yellow. It takes a fine Poliſh. The Stone was found, on the Brow of the Hill, near the Mill on the Edge of *Hamſtead-Heath*.

c.51. Another Plate. It has a bright brown Spot in the middle, environ'd with a white, and that with a brown Circle, and ſo on alternately ſeveral Rounds. Found in a Gravel-pit, not far from the Bowling-Green on *Hamſtead-Heath*.

c.52. Another ſmall round Plate, the Ground grey. In the middle is a Spot of yellow, ſurrounded with a Circle of red, that with one of white, and that with one of yellow, and without that are Circles of purple, blue, and yellow, but all very faint. 'Tis very beautiful, and the Poliſh fine. Found in the Gravel-Pit near the Bowling-Green. *Hamſtead-Heath*.

The forty four following *Flinty Pebles*, beginning with N° 53. and ending with N° 96. incluſively, are variouſly clouded, ſpotted, and ſtriped or lineated, the Lines generally encircling and within one another, tho' variouſly diſpoſed and figured. The Colours of the Spots, and Lines are very various, blue, yellow, brown, red, grey, and white. Theſe I mention are the Colours of the interior Parts, the Bodies being broken to ſhew the inner Conſtitution of them, which is very cloſe, and hard, ſo that they are capable of a good Poliſh.

c.53. A *Flinty Peble* ſtriped circularly. Found in a Gravel-pit near *Iſlington*.

c.58. Another, found in the Gravel-Pit, near the Bowling-Green, on *Hamſtead-Heath*.

c.61. A Plate, cut off a *Flinty Peble*. Found in a Gravel-Pit, amongſt the new Buildings by *Dover-ſtreet*, near *St. James's*.

c.65. Another. Found in *Greenwich-Park*.

*c.*70. Another. Found in the Road, a little on this ſide *Hamſtead*.

*c.*71. Another. Found at the Foot of the Hill, about a Mile on this ſide *Hamſtead*.

*c.*73. Another. Found in the Road, a little on this Side *Hamſtead*.

*c.*77. Another. Found in the Road, a little beyond *Kentiſh-Town*.

*c.*78*. A large oval Plate, cut off a *Flinty Peble*. Found in a Gravel-Pit, near the *Bowling-Green* on *Hamſtead-Heath*. It takes a good Poliſh, and is a very fine Stone.

*c.*89. Another, broke in two. From a Gravel-Pit near *Graveſend*. I once was in doubt, whether the blackiſh Coats of theſe *Flinty Pebles*, (ſo common in *Surrey*, *Kent*, and *Middleſex*,) were their original outmoſt Coats. But View of this, of that, *c.95*. and indeed thoſe, *c.*37.*a*. to *c.*37.*h*. as alſo *c.*58. *c.*65. *c.*77. and *c.*90. with very many others that I have obſerv'd ſince, have ſatisfy'd me that they really were. For theſe Coats, in Shape, nearly conform to the Lineation or Coats within. Which they never could poſſibly have done, had they been alter'd and worn by the Motion of Water, or the like, in Bodies of this irregular Form. In Bodies of a globoſe Form, they might.

*c.*90. Another, broke in two. From ſtill the ſame Gravel-Pit.

c.95. Another. Gravel-Pit near *Graveſend, Kent*.

The following *Flinty Pebles*, are very few of them ſtriped, but ſpotted, and clouded very variouſly, and many of them in a very elegant and beautiful manner, with Black, Blue, Yellow, Red, Purple, White, Grey, and Brown. They begin with N° 97. and end with N° 129. incluſively. They are as firm, and capable of as fine a Poliſh as the other.

*c.*97. A *Flinty Peble*, ſpotted with Yellow. The Body of it is ſemi-pellucid. 'Tis cover'd with a very rough grey Cortex. Found in *Kenſington Gravel-Pits*.

*c.*98. Another, on one part flat, on the other convex; found near *Woolwich*. This has the Convex Part cover'd with a Cruſt, as the Outſides of theſe Bodies conſtantly are: but the flat has no Cruſt, but is in Conſtitution like that of the inner Subſtance of theſe Bodies. And doubtleſs there was a natural Flaw and Crack there; at which the Body parted, and fell into two pieces. Such Cracks we frequently obſerve in them, when lying in their Strata, and before any external Force could come at them to break them. And ſome there are that part at thoſe Cracks, with the greateſt eaſe imaginable. 'Tis likewiſe the Caſe of thoſe, *c.*180. *c.*37.*h*. *c.*37.*a*. *c.*178. *c.*179. *c.*214. *c.*233. *c.*232. *c.*251. *c.*307. The grey Lines on the flat, enter not the Subſtance; ſeem to be ſuperficial, and owing to an external Agent.

*c.*102. Another, found in the Gravel of the *King's-Bench Walks* in the *Temple*. This ſeems to have been parted like that, *c.* 98. and the flat ſeems to have ſuffer'd by ſome external Agent, perhaps Water; and to have been a little rough'd, perhaps by being moved and ſlided on by the Water departing at the end of the Deluge. I have commonly obſerved *Flinty Pebles* with their Flats rough'd like this.

c. 106. Another, broken off N° 154.

c. 112*. A Plate cut off a *Flinty Peble* found near *Greenwich, Kent.* 'Tis an elegant Stone, hard, and the Poliſh admirable.

c. 113. Another. Found at the foot of the Hill, in the Road, a Mile on this ſide *Hamſtead.*

c. 114. A Plate cut off a *Flinty Peble.* Found in the *Gravel-Pit,* near the *Bowling-Green* on *Hamſtead-Heath.*

c. 115. A Plate cut off a *Peble.* Found in the Road a little beyond *Kentiſh-Town, Middleſex.*

c. 116. A *Peble.* Found in the Road near *Deptford.*

c. 117. Another. Found in the *Gravel-Pit* near *Iſlington.*

c. 129. A *Flinty Peble,* ſemidiaphanous, not unlike the Achate, the Ground grey, with Spots of Red; only towards the Surface it terminates in a Yellowiſh. Found in a *Gravel-Pit* near *Graveſend, Kent.*

c. c. 129*. A Piece of *Flint,* having, on one ſide, extremely ſmall Sparks of Cryſtal: The other ſide, being poliſh'd, exhibits ſeveral Colours, chiefly red and white, finely intermix'd. The Stone nearly approaches a Jaſper. *Netleden, Buckinghamſhire.*

c. 130. Another, the Ground more pellucid, of an horny Appearance, and as fine as the *Eaſt-Indian* Agat. 'Tis ſpotted, like the two former, with red Spots. The Outſide of this is ſmooth, clear, and ſhews the Spots at and underneath the Surface. Found near - - - - - in the *Peak.*

c. 131, 132. Two oval Plates, cut off the foregoing, and poliſh'd. They are of a very fine Poliſh, and beautiful Stones.

c. 135. An oval Plate cut off a *Flinty Peble.* Found in the Road about a Mile on this ſide *Hamſtead.* It takes an admirable Poliſh: and is indeed a fine Stone.

c. 136. Another oval Plate, finely variegated with Red, Purple, Blue, a ſemidiaphanous Grey or Skye, Yellow, and Brown. The Poliſh is extraordinary. The Stone was found in the Road, on the Brow of the Hill about half a Mile on this ſide *Hamſtead.*

c. 137. Another Plate, variegated with Blue, Grey, White, Red and Yellow, in an elegant manner. The Poliſh very good. The Stone off which this was cut, was found in a *Gravel-Pit,* near the *Bowling-Green* on *Hamſtead-Heath.*

c. 138. Another Plate, variegated with White, a light Grey, a more duskey Grey, Yellow, and a few faint ſmall Spots of Red. 'Tis finely poliſh'd. This, and that, N° 147. were both cut off the ſame Stone, which was found at the Foot of the Hill, in the Road, near a Mile on this ſide *Hamſtead.*

c. 139. Another oval Plate, variegated with Yellow, Red, Purple, and White; the Colours very lively, and the Poliſh excellent. This was cut off the Stone, N° 154. *infra,* which was found in the ſame Road with the precedent, on the Brow of the Hill.

c. 140. Another oval Plate, variegated with White, Red, a pale Yellow or Straw-Colour, and Brown, with a faint Eye of Green. The Poliſh is good. The Stone was found, in the Road, a little beyond *Kentiſh-Town.*

c. 141. Another oval Plate, variegated with a ſemidiaphanous Grey, Red, Yellowiſh, and Brown. The Poliſh is extraordinary, and 'tis indeed a fine Stone. Found in a Lane about a Mile on this ſide *Hamſtead.*

c. 142*. A *Flinty Peble,* cut and poliſh'd; variegated with Red, Yellow, and White. Found, in the Road, about a Mile Weſt of the Church of *Gaddeſden Magna, Hertfordſhire.*

c. 143. Another *Flinty Peble,* variegated in a very lovely manner, with a ſemipellucid Agat-like Grey, Red, and Yellow. Found on the Brow of the Hill, in the Road, a little on this ſide *Hamſtead.*

c. 144, 145. Two oval Plates cut off the foregoing Stone. The Poliſh is excellent, the Colours lively and diſtinct, and the Stones little inferior to any *Indian Agat* I have ſeen.

c. 146. Another oval Plate. The Ground a dark ſemipellucid Agaty-Grey, very like that of ſome *Mochoa-Stones.* There are a few Spots in it more clear and pellucid; and one pretty large, part of it being of an Opake White, and part of an Opake Aſh-Colour. But what is moſt curious and obſervable, is, that there runs obliquely a Line (of about $\frac{1}{4}$ of an Inch in breadth) for almoſt the whole Length of the Stone; which ſeems to conſiſt of ſeveral ſmall Cells, much like thoſe of an Honey-Comb, only conſiderably leſs. The Parietes, or Partitions of them, are white and opake. They are fill'd with a grey ſemipellucid Matter, but in ſome parts darker, in others clearer, being indeed little different from that that conſtitutes the main Ground of the Stone. The *Flinty Peble,* off which this Plate was cut, was found near *Carlton, Kent.*

c. 147. Another ſmall oval Plate. On one part 'tis of a fine ſemipellucid Agát-like Grey; in the middle Yellow; that is ſucceeded by a Line of Red; and that by Spots of a darker and lighter Grey, and of Red. 'Tis a beautiful Stone, and bears a fine Poliſh. This was cut off the ſame Stone with the Plate N° 138. *ſupra.*

c. 148. A very ſmall Stone, cut into a convex Form on one ſide, and a flat on the other. The Baſis is grey and opake, the Middle white and opake, and the upper Part of the Convex yellow and ſemipellucid. *Hamſtead-Heath.* 'Twas originally of this Shape, and is only leſſen'd ſo far as the poliſhing required.

c. 149. Another, of like ſort and opake. The Baſis White, the Top of a dark Aſh-Colour. The *Peble* off which this was cut, found on the top of *Oak of Honour Hill, Surrey.*

c. 150. A ſmall white Stone, cut into an oblong Convex Shape, the Baſis flat. 'Tis ſprinkled with very ſmall Spots of Red, and croſs'd obliquely with a Vein of the ſame Colour. It has taken

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a fine Poliſh. The *Peble* was very little bigger than now 'tis cut. 'Twas found by the Brook-ſide near *Luiſham, Kent*.

c. 152. An oval Plate of a yellowiſh Brown, and clouded in ſome Parts with a darker Brown. 'Tis opake, but takes an excellent Poliſh. Found in the Road, about a Mile on this ſide *Deptford*.

c. 154. A *Flinty Peble*, finely variegated with Purple, Red, White, Grey, Yellow, with a faint Caſt of Blue and Green. *Conf.* N° 139. *ſupra*. That Plate being cut off this Stone: as alſo N° 106. that Stone being a piece of this.

Eleven *Flinty Pebles*, beginning with N° 156. and ending with N° 166. lineated like thoſe N° 53, *&c. ſupra*.

c. 158. Another, from the ſame Pit.

c. 161. Another, broke into two Pieces. From the ſame Gravel-Pit.

c. 167. A *Peble*, of an oval Shape, the Colour very white, and its Surface very ſmooth. Found on the top of a Hill near *Henly, Oxfordſhire*. This is of a Sparry Conſtitution, and apparently worn and rounded by Water. *Conf.* 27. *ſupra, &* 187. *infra, &* 192. *infra, &* 227. *infra*.

c. 168. Another, of a globular Form, but ſomewhat compreſs'd; the Surface pretty ſmooth, and of a light whitiſh brown Colour. Found near *Warwick*.

c. 169. A *Flint*, of the ſame Shape, the Surface very ſmooth, and of a dark grey Colour. 'Tis whole, but ſeems to be ſemipellucid. Found in a Gravel-Pit in *Hyde-Park*.

c. 170. A *Peble*, round, and of a Figure more compreſs'd. 'Tis of a dark yellow Colour. *Kenſington Gravel-Pit*.

c. 174. A Piece of the common black *Flint*, broken, and wholly diveſted of its outer Cruſt. 'Tis gloſs'd all over with a Braſs-like ſhining Armature, like that of the *Cornua Ammonis*, and other like Bodies that are found in the Earth, together with the *Pyritæ*. This was found in a Rivulet near *Hockſon, Suffolk*. Mr. *Adam Buddle*. All the *Flints* in the ſame Rivulet were tinged with the ſame ſhining Gloſs. *Qu.* Is the Water of this Rivulet impregnated with Vitriol? or are there any *Pyritæ* in it?

c. 175. A black *Flinty Peble*, with ſeveral large white Spots, and one of a light brown. What is obſervable in this Stone, is, that the Spots are of the ſame Colour throughout, even to the very Edges, there being an immediate Tranſition from White to Black, and the Colours not fading or declining gradually, and mixing as they approach each other. Found on *Shooter's-Hill, Kent*.

c. 176. An oblong, black, *Flinty Peble*, the Surface pretty ſmooth, and having on it three large yellowiſh Spots, of much the ſame Size and Figure, in both thoſe reſpects much reſembling a Garden-Bean.

c. 177. A dark grey ſemipellucid *Flint*. In one Part of it is a Delineation in white, not unaptly reſembling a human Face. The Marks of this ſort are wholly contingent, and ſo ſcarcely worth notice: but there are thoſe who ſet a Value upon them, ſo that I thought ſuch not altogether to be neglected, and therefore mention this, and the two or three more that follow. Found near *Clapham, Surrey.*

c. 178. A yellowiſh *Flint,* with a greeniſh Caſt. *Newington-Green.* There is naturally delineated upon it, in a pale Yellow, a Figure ſomewhat reſembling a Scorpion, in an Hollow of the Stone. There's another broad Hollow on the oppoſite ſide of it. *Conf.* N° 232. *infra.*

c. 179. A grey *Flint,* with a Figure in white, reſembling a waved or flaming Scymeter. Found near *Peckham, Surrey.*

c. 180. A *Flinty Peble,* of a dark grey Colour, with an Eye of Purple. There are upon it two Figures in white, like the *Roman* V. Found on *Clapham-Common, Surrey.*

c. 182. A large, flat, *Flinty Peble,* the Ground black, undulated in a very elegant manner, and veined with White. The Veins are in all parts of near the ſame Diameter, and about $\frac{1}{10}$ of an Inch over. Found on the Shores of *Sheppy-Iſland.*

c. 183. Another, likewiſe very curious, and little different from the former, only the Veins are ſomewhat larger. Found on the ſame Shores.

c. 187. A *Peble,* of a pale brown Colour, vein'd pretty thick with ſmall Lines of a yellowiſh brown Colour, variouſly interſecting one another. Found on a Hill near *Henly upon Thames.* The Surface of this is very ſmooth, excepting that the Veins riſe, and are ſomewhat more prominent than the reſt of the Surface, tho' but very little. This appears to have been ſmooth'd and rounded by Water.

c. 191*. Another, clouded with brown and a dark Red, and encompaſs'd with Zones of White; to which, in ſome parts of them, is ſuperadded an Eye of Red. Found, near Sir *John Mordant*'s Hoſpital, on *Black-Heath.*

c. 192. Another, of a reddiſh brown Colour. 'Tis ſurrounded with two Zones of White of about $\frac{1}{10}$ of an Inch thick, nearly parallel to one another, and diſtant about $\frac{1}{10}$ or $\frac{1}{12}$ of an Inch from each other. They are indeed two white Plates, terminating in circular Lines or Zones at the Surface of the Stone; but paſſing quite through its Subſtance, as appears by the breaking and view of the interior Conſtitution of it. Found in the Road near *Droitwich, Worceſterſhire.* This ſeems to be worn by the Motion and Agitation of Water; which alſo I take to be the Caſe of *c.* 188. *c.* * 191. *c.* 198. *c.* 199. *c.* 200. *c.* 230. *c.* 298. *c.* 276. This, on a Review, appears to be, not a *Peble,* but rather a Fragment of ſome hard Stratum, probably of Marble, broke off, and rounded, by the departing Water of the Deluge. Which ſeems alſo to be the Caſe of *c.* 195, 196, 202.

c. 193. A *Flinty Peble,* ſurrounded with many parallel Lines, or Zones of White and Grey alternately. 'Tis broken, and the ſame Lines diſcover themſelves within through the whole Subſtance of it. So that the exterior ones are no more than the Terminations of the grey and white Plates, of which alternately this Body is compoſed. *Bromly, Kent.*

c. 194. Another, very little different from the former. From a Gravel-Pit near *Graveſend.*

c. 194*. Another, not differing conſiderably from the two foregoing. The Surface of this is extremely ſmooth and polite. Found in a Gravel-Pit on *Hamſtead-Heath.*

c. 195. Another, of the ſame Compoſition ſtill, only the Plates are one of a whitiſh, the other of a reddiſh Brown, placed alternately. Found near *Bewdly, Worceſterſhire.*

c. 196. Another, little different from N° 195. except that the Plates and Zones they end in, are broader. The Surface ſmooth for this ſort of *Peble.* Found not far from the precedent.

c. 197. Another, of yet the ſame Compoſition. In this the Zones are grey and yellow alternately. *Shooter's-Hill.*

c. 198. Another. The Zones white and brown. *Weſt-End, Middleſex.*

c. 199. Another. The Zones grey and brown. The Surface exceeding ſmooth. Near *Woolwich, Kent.*

c. 200. Another. The Zones grey and yellowiſh. Found in *Greenwich-Park.*

c. 201. Another. The Zones white and a dark Grey. *Greenwich-Park.*

c. 202. Another, of an oblong Figure. In the Middle 'tis encompaſs'd with Zones of Black and Brown alternately: at each End 'tis only Brown. The Surface is ſmooth for this ſort of *Peble.* Near *Bewdly, Worceſterſhire.*

c. 203. A *Peble,* of an oblong Figure, ſurrounded alternately with Ridges and Furrows. The Ridges are compoſed of a Matter that is hard and polite, and of a darker brown Colour than the Furrows. Found near *Buſh-Hill, Middleſex.*

c. 203*. Another, little different from the precedent, only 'tis ſmaller. *Iſlington.*

c. 204. Another, of an oblong Figure, and brown Colour. One half of it is ridged as the former: the other ſmooth. *Hyde-Park.*

c. 205. Another, of a rounder Form; but encompaſs'd with Ridges and Furrows, tho' not quite ſo deep as the foregoing. 'Tis of a reddiſh brown Colour. *Fulham, Middleſex.*

c. 206. Another, little different from N° 205. only 'tis of an Aſh-Colour. *Kentiſh-Town.*

c. 207. Another, ridged in like manner. This has ſome degree of Diaphaneity. *Black-Heath,* near *Deptford.*

c. 208. Another, ridg'd alſo, and of a light brown Colour. *Iſlington.*

c. 209. A grey *Flint,* conſiſting of Plates variouſly apply'd to one another, their Extremities terminating in Ridges at the Surface of the Stone. *Holloway,* near *Highgate.*

c. 210*. A black *Flinty Peble*, oblong, with ſeveral like Plates in the middle of it. *Iſle of Man.*

c. 210†. Another, oblong alſo, of a pale brown Colour, compoſed intirely of like Plates. *Silverton, Devonſhire.*

c. 211. A *Flinty Peble*, of dark grey Colour. In two or three Parts 'tis ſtriped with Lines of White and the ſame Grey alternately. Found on *Black-Heath*, near Sir *John Mordant*'s Hoſpital.

c. 212. Another, very little different from the foregoing. *Northfleet, Kent.*

c. 213. Another, Grey. At one end 'tis ſtriped with ſmall Lines of Grey and White. *Hamſtead-Heath.*

c. 214. Another, Grey with an Eye of Green. At one end 'tis ſtriped with Lines of Grey and White. *Greenwich.*

c. 215. A *Flint* of a light brown Colour. In one part of it is a *Sinus*, croſs'd with Lines of Yellow and Aſh-Colour, alternately. *Iſlington.*

c. 216. A Piece of a *Flint* cover'd with a white Cruſt, which is ridged and furrowed, tho very ſlightly. Being broken, it appears within to conſiſt in ſome parts of Plates, White, and a very light Grey, alternately: in others 'tis only of a dark Grey. It has ſome ſmall degree of Diaphaneity. Found in a Gravel-Pit, at *Green-Hythe, Kent.*

c. 217. A *gritty Stone*, of a reddiſh brown Colour, and globular Form. 'Tis about $\frac{1}{2}$ of an Inch in Diameter. From a Brook near *Otterton* in *Devonſhire*, where there are great Numbers of them found.

c. 218. Another, ſomewhat leſs. From the ſame Brook.

c. 219. A *Flint* in ſhape of a ſmall Pear. *Shooters-Hill.* At the leſſer end, for half the length of it, 'tis White, the reſt a dark Grey. There's a Stone in *J. Bauhin*'s Book *de Fonte Bollenſi*, of much the ſame Figure and Size. He calls it *Lapis Cinereus Cyſtoides Judaico ſimilis*: and has graved an Icon of it, *p.* 35.

c. 220. A brown flinty *Peble* of an oblong ſquare Form, only the four Corners jet out into ſo many Prominencies gradually leſſening till they end in a blunt Point, and are all of much the ſame Size and Shape. Found in *St. George's-Fields, Southwark*, in a Gravel-Pit.

c. 221. A yellowiſh *Peble* ſwelling out at one end in ſuch manner, that it ſomewhat reſembles one of the common pileated Muſhrooms. The two parts appear as they would, had they been ſoft like Paſte, and then ſtuck together. Taken up in *Hamſtead-Town.*

c. 222. An oblong compreſs'd greyiſh *Peble* with a very rough Surface, only there are two parts very ſmooth, of a much darker Colour, and tho plain, yet raiſed above the ordinary Surface of the Stone; appearing like two Pieces of Plaiſter ſtuck upon it. Theſe Parts are cloſer and harder than the reſt of the Stone. *Tatnum-Court.*

c. 223. A *Peble* of a light brown Colour, and oblong Shape, having two Appendages of the ſame Size and Shape, and oppoſite to each other jetting out on each ſide, about the middle of the Stone, ſo that it appears as if it were transfixed by a Bolt. *Sheppey-Iſland, Kent.*

c. 224. Another, of a ſomewhat paler Colour, beſet with ſeveral Protuberances, appearing like ſo many Warts leſſer and larger upon its Surface. *Sydenham-Common*, near *Dulwich.*

c. 225. A *Flint* of an oval Shape, an Inch and a half long, and about an Inch over. 'Tis ſomewhat flat, terminating all round in an Edge. On one ſide 'tis white, ſomewhat rough, and riſes into a regular oval Convex. The other riſes likewiſe, but not near ſo much, is very ſmooth, of a yellow Colour with a Caſt of Green, and has a Line of White, about $\frac{1}{12}$ of an Inch over, round the Edge. This was found in the great Gravel-pit on the Eaſt-ſide of *Hyde-Park.* I have ſeen ſeveral in the Gravel about this Town of the ſame Shape and Colours, but all leſs than this.

c. 226. A gritty *Peble* of a very light brown Colour, an oblong oval Shape, an Inch and $\frac{3}{4}$ in length, and one Inch in breadth, flattiſh, and having the two Ends ſomewhat pointed. There's a narrow Ridge, of the ſame breadth in all parts, running directly long-ways of the Stone, and quite encompaſſing it. This Ridge conſiſts of a cloſer and harder ſort of Matter than the reſt of the Stone. In the middle on one ſide, the Stone ſinks in, and riſes out on the oppoſite, as if it had been ſoft and preſs'd in that Part. Indeed it appears, upon the whole, as if it had been flat the quite contrary way of what it is at preſent, and the Ridge that now runs thorough the middle of the Flat, had terminated at the Edges of the Stone, till ſome exterior Force compreſſing the two oppoſite Edges, brought it to the Form it now obtains, which indeed is very odd and extraordinary. Not but that it might originally have concreted into this Form, and perhaps it did. Where the ordinary Surface of the Stone ſinks in, the Ridge yields in proportion. 'Tis not likely that this Ridge was extant at the firſt Formation of the Stone. *Confer.* N° 227. *infra.* but it appears very naturally as if it had been ſoft, and then compreſs'd, and wrought into the Shape it now bears. I found it in a Gravel-Pit amongſt the New Buildings by *Dover-ſtreet, St. James's*, in the Year 1688. and 'twas the firſt Stone I ever took notice of, or gather'd. *J. Bauhinus, de Fonte Bollenſi, p.* 36. has an Icon of a Stone not unlike this. He gives it the Title of *Lapis cinereus ſemiovalis coſtâ per mediam longitudinem leviter ſurrectâ.*

c. 227. A *flinty Peble* of a darker brown Colour, and firmer Conſiſtence, but much the ſame Shape with the foregoing, tho' it be of ſize ſomewhat leſs. Inſtead of the Ridge, mention'd in the former, this has a whitiſh Line environing of it length-ways, in like manner as the Ridge does that. This Line does not riſe at all above the ordinary Surface, this Body being in all parts of the ſame Hardneſs. And poſſibly that which is now the Ridge in that Stone, was originally not more raiſed than the reſt of the Surface of the Stone, but being harder than the other parts of it; if the Stone was fretted or rubbed againſt other Bodies, 'tis certain the ſofter parts of it would yield ſooneſt to the Attrition, and wear off the faſteſt; and this, more reſiſting the external Force upon it, would abide, and remain thus prominent, whilſt the reſt yielded, and wore off. 'Tis very certain, and there are multitudes of Inſtances in thoſe Stones that are tumbled about upon the Shores by the Sea, agitated by the Tides and Storms, that the Parts that are ſofteſt wear faſteſt, and are hollow'd; whilſt the harder, better enduring the Brunt, are prominent, and ſtand out above the others. The Stone, N° 226. lay in a Gravel-Pit, far from the Sea, or any River: and 'tis not likely but that it had lain quietly ever ſince 'twas firſt repoſited there. But from Contemplation of this, and ſeveral others of like Conſtitution, *Conf.* N° 187. 203, *& ſeq. uti &* N° 222. 'tis evident that theſe Bodies have had their Surfaces ground, and worn, betwixt the Time that they were form'd in the Water of the Deluge, and that when they were repoſited in the places where they are at this day found. Now that could never happen from any other Cauſe, than the Hurry, Precipitation, and rapid Motion of the Water, returning, at the end of the Deluge, towards the Sea, and the Apertures of the Abyſs, which are at the bottom of it. For, from ſeveral Obſervations that I have made, which ſhall be all deliver'd in their proper place, I find that the Force of the Water, ſo returning, was ſo great, as to tear up ſome of even the moſt ſolid Strata, and bear vaſt Maſſes of them with it, tumbling them along, rounding and ſmoothing them, and leaving many of them behind, when its Force began to abate; of which there are Inſtances in almoſt all parts of the World. Leſſer Fragments, and Nodules, were more eaſily born away, and rounded. That they were really ſo, beſides this Argument, of the harder parts of theſe Nodules commonly ſtanding out, and being more prominent than the ſofter, where they conſiſt of two ſorts of Matter, the one more firm and ſolid than the other; I take the Smoothneſs of the Surface of ſome *Pebles* and *Flints*, their original native rough Coats being worn off, to be a Proof of the ſame Thing. This Smoothneſs is very obſervable in the Surfaces of *c.* 167, 168, 169, 187, 192, *194, 196, 199, 202, all found in Gravel-Pits, or other Places where they had lain undiſturb'd from the Time that they were firſt repoſited there. And yet theſe have their Surfaces as ſmooth and polite as thoſe, *c.* 186, 188, or any other that I ever met with upon the Shores, that had been ground and poliſh'd by the Agitation of the Sea. But there's yet another *Phænomenon*, that I take to be an undeniable Evidence of this Motion of the Water, and Attrition of the Stones hurry'd on by it. It is that the Nodules, that are made up of a Collection of ſmaller round *Pebles*, of different Figures and Sizes, cemented together into one Maſs or Lump, I ſay theſe Nodules have their Surfaces ſmooth. Thus in the Nodule,

dule, N° 7. *ſupra*, taken forth of a Stratum of Gravel, and that is made up of many black, ſmall, flinty *Pebles*, held together by a yellowiſh Cement, tho all of them that are within the Stone, have ſome degree of Convexity, yet thoſe at the Surface on all ſides the Stone, terminate in a Flat that is coincident with the Plane of the Surface of the Nodule. Inſomuch that on the outſide it appears like a yellowiſh *Peble*, ſpotted with black, the whole Surface being pretty ſmooth. The Stone is cut thorough the middle; by which means the Shapes of the *Pebles* that compoſe it are very evident, and their Convexity manifeſt. And it muſt needs be granted, that *Pebles* of that Shape could never by any Contrivance whatever be ſo diſpoſed as to conſtitute a Body with a plain even Surface. Indeed it might be ſo order'd, that only a ſmall part of the Surface of the black *Pebles* ſtanding to the common Surface of the Nodule, the Interſtices of the *Pebles* might be fill'd up with the Matter that conſtitutes the Cement, and ſo the Surface be render'd ſmooth. But then the black Spots muſt be ſmall, whereas in this the Diameters are as large, moſt of them, as the largeſt Diameters of the Bodies of the ſaid *Pebles*; which 'tis impoſſible they ſhould, had only ſome ſmall Portion of the Convex of them appear'd at the Surface of the Nodule. In ſhort, they are as large as that Flat would be, after they were ground down to the Middle or Center. And indeed they appear here to have been ground ſo; for viewing the Face of the Stone where cut, the *Pebles* at the Surface of the Nodule have their inner Surfaces, I mean thoſe towards the Center of the Nodule, conſtantly convex; whereas thoſe Surfaces that terminate at the Surface of the Nodule, are every where near plane. So that theſe are there, ſome of them, Half-Spheres, others Half-Ovals, and the like; but there are none of ſuch Figures in the Body, or interior Parts of the Nodule. In fine, at the Surface of the Nodule there are ſome few *Pebles* of a firmer and cloſer Conſtitution than the reſt; and theſe are more polite than thoſe, and riſe ſomewhat above the ordinary Surface of the Nodule, as having better maintain'd their ground, and endured the Attrition, than the reſt could, that were not quite ſo hard. Upon the whole, here are ſo many Evidences that the Surface of this Body was originally uneven, and afterwards ground and wrought to a Plain, that the Thing cannot poſſibly be doubted of. Further Proofs of this we have in thoſe, N° 8. & 10. *ſupra*, and other like Bodies conſiſting of *Pebles* cemented and held together in one Maſs.

c. 228. An oval *Stone*, of a brown Colour with a Caſt of Green. It ſomewhat reſembles a Wallnut, diveſted of its outer green Coat, both in Size and Shape; and is, in like manner, divided into two equal Parts, by means of a Line paſſing length-ways round it. 'Tis ſmoother and more polite on the Parts on each ſide the Line than elſewhere, which indeed are now ſomewhat more prominent than the other parts of it, and appear formerly to have been yet more ſo, but ground and worn down by Attrition againſt ſome other Bodies, by which means 'twas ſmoothed and poliſhed. This is ſo evident from Inſpection of the Stone itſelf, as not to be deny'd. *Brompton*, near *Chelſey*.

c. 229. A black flinty *Peble* of a compreſs'd Form; and, indeed, both in Form, and Bigneſs, reſembling a Garden-Bean. Quite round the Edge of it runs a Line, $\frac{1}{12}$ of an Inch in breadth, and of a yellow Colour, with an Eye of Green. Gravel-Pit in *St. James's Park*.

c. 230. A triangular flinty *Peble*, of a dark grey Colour, with a Caſt of Green. It riſes on each ſide into a Convexity. There runs quite round the Edges, and by the Angles of it, a Line of a yellow Colour, and about $\frac{1}{8}$ of an Inch in breadth. There's alſo on the more convex ſide a part bunching out a little, of a yellow Colour with a higher Caſt of Green. This, and the Line round the Edges, are ſmoother than any other part of the Stone, and ſeem to have been ground down, thorough the exterior Coat, till the inner Conſtitution of the Stone appears. [Let it be cut, in order to diſcover whether it be yellow throughout.] 'Twas found in a Gravel-Pit in *St. George's-Fields, Southwark*.

c. 231. A *Peble* of a light brown Colour, and of a gritty coarſe Conſtitution. 'Tis encompaſſed with two parallel Lines of about $\frac{1}{20}$ of an Inch in breadth, and at the Diſtance of $\frac{1}{8}$ of an Inch from each other. Theſe Lines are more prominent, and polite, than the reſt of the Surface of the Stone; and of a firmer and cloſer Conſtitution. Indeed the whole ſeems to have been ground and worn, which theſe have endured better than the other leſs firm Parts, and ſo are more riſing and prominent than they are. Gravel-Pit on this ſide *Hyde-Park*.

c. 232. A flinty *Peble*, having ſix roundiſh Cavities in it, pierced through the Coats of the Stone to the medullar Parts of it; where 'tis of a dark green Colour. The exterior Cortex is of a Foliomort Colour. The next under that a whitiſh brown. Then a Foliomort again. And, laſtly, the green Subſtance. Theſe Cavities do not appear to have been cauſed by any breach of the Stone; but are as if ſix other Bodies had been contiguous to it whilſt it was in Formation, and hindred the ſucceſſive Application of the Matter, in order to the Continuation of the Cruſts in thoſe Parts or Cavities. *Conf.* N° 178. *ſupra*. *Kentiſh-Town*.

c. 233. A *Peble* of a round compreſs'd Form, the exterior Surface very rough, of a brown Colour with Spots of yellow. There is a ſemilunar Cavity (naturally) in it, that is of the ſame Colour, but much ſmoother than the Surface. *St. George's-Fields, Southwark*.

c. 234. A ſmall, black, flinty *Peble*, of much the ſame Shape with the former. The Surface is black, with a Spot of yellow. It has (naturally) a Cavity in it, ſmoother than the Surface. Found at the Foot of *Shooters-Hill*.

c. *234. A *Flint*, the outer Cruſt of an horney Grey, with ſome degree of Diaphaneity, like an *Agat*; the inner of an Aſh-Colour, and opake. In the middle is a clear Cryſtalline Matter, ſhot in ſome parts, where there was room, into hexagonal pointed Cryſtals. I have elſewhere ſet forth thoſe Obſervations on *Flints*, and *Agats*, from which it appears that the Parts of theſe Bodies, that have an horney Diaphaneity, owe it to an Admixture of Cryſtal incorporated with the common Maſs of the Stone. This was found near *Purfleet, Eſſex*. I have ſeen ſeveral *Flints*, that, when broke, had Cavities within, thick ſet on all ſides with fine hexagonal Cryſtal Shoots, and after the manner of the concave Cryſtalline Balls; and ſome very fair, and pretty large.

c. 245. A *Peble* of a light brown Colour. In one part of it the Surface is ſomewhat depreſs'd; and there, upon a Plane, are ſeveral ſmall oblong Studds, each near as big as a Rape-Seed, placed regularly in a Quincunx Order, at the Diſtance of about $\frac{1}{20}$ of an Inch from each other. The Plane is near ſquare; and there are nine Rows of the Studds each way, from ſide to ſide. On one ſide of the Square the Stone is broken, and ſeems to be worn away on another; ſo that how far the ſaid Plane might originally extend, is not to be known. 'Twas found in a Gravel-Pit amidſt the New Buildings near *Dover-ſtreet, St. James's*. The Studds of this are ſmooth at top, and not abrupt; nor have they any appearance of being broken off from any thing elſe; which thoſe of the following manifeſtly have.

c. 246. A grey *Flint* with a browniſh Caſt; the outer Coat grey. 'Tis ſplit in two; and in one Piece are very many Studds, ſomewhat larger than thoſe of N°. 245, and ſet cloſer together. They ſtand in an Order approaching a Quincunx, tho not quite ſo regular as in the foregoing. They are abrupt at top; and were originally continuous to the oppoſite Piece. The Surface, or Plane, whereon they are planted, is depreſs'd in three places, and riſes gently in the Intervals. The Depreſſions, and Riſings, are ſtreight, and parallel. Whether there were not more of them; or how far the Plane extended, does not appear, this being only a piece of the *Flint*, and is intirely ſtudded over. In the oppoſite piece of the *Flint* are ſeveral little Cavities, into which the Studds were implanted. The Intervals of the Cavities, riſing a little, make a pretty kind of reticulated Work. The Surface of the Plane in this riſes alternately, and is depreſs'd ſo, as to tally with, and anſwer the other. Found in a Corn-Field, near the *Thames*, by *Graveſend*.

c. 247. A brown *Flint* of a Conic Figure. The Baſis is oblong, being one Inch and a quarter long-ways, and near an Inch acroſs; and is ſomewhat depreſs'd or hollow'd gradually towards the middle of it. Round the Edges of the Baſe are two Ranks of Cavities, in each of which is placed a roundiſh Studd, about the bigneſs of a Grain of Millet. The Studds have their Surface punctulated, as if ſet all over with other Studds infinitely leſſer. Near the Apex, or Top of the Cone, is a *Corona* or Circle of the ſame ſort of Studds, but much broader, there being more of them in ſome parts than in others. The Studds are of a much darker brown than the reſt of the Surface of the Stone; and they being punctulated, and the ordinary Surface ſmooth, make the whole a very extraordinary Object. This I found in a Gravel-Pit near *Cambridge*. A very ſmall piece of this *Flint* is broken off, which diſcovers it to be of a whitiſh grey Colour, very polite, and of a firm cloſe Conſtitution within. *Vid.* N° 252. *infra.*

c. 248. Another, of like Figure, but much larger. This is covered all over with a grey Cruſt; and has two Fragments of Spines of ſome ſort of marine *Echinus* adhering to the Surface of it. Round the Edges of the Baſe of it is a Line $\frac{4}{10}$ of an Inch in breadth, thick ſet with ſmall Pores, and Studds, and there are ſome large flat Ridges running irregularly a-croſs it. The Top of the Cone is cover'd with a Spot, rather inclining towards one ſide of the Body, $\frac{3}{4}$ of an Inch in Diameter, ſtudded and porous, for the main, like the Line round the Baſis. Found in a Corn-Field near *Green-Hythe, Kent.*

c. 249. A dusky brown *Flint*, of a Conic Figure, but rounder and more ſlender, and having the Baſe leſs than either of the former. 'Tis about an Inch and a half long; and an Inch in Diameter. Round the Edges of the Baſe runs a Line about a quarter of an Inch over, and of a paler Colour than that of the reſt of the Body. It ſinks in for about $\frac{1}{20}$ of an Inch, as if the Surface had been graved, and the Stone cut into by a Tool. The Margins of it, on each ſide, do not terminate in a ſtreight Line, but are indented, each Indentation being continued in a ſmall Ridge a-croſs the Line to the Indentation that anſwers it on the oppoſite Margin. They are towards the Edge of the Baſe a little effaced, as if fretted or worn down. Round the Apex at top, 'tis encircled with a Line or *Corona* of much the ſame Breadth, and Work, as that at the Baſe. *Hamſtead-Heath.*

c. 250. A ſmall grey *Flint*, cover'd with a whitiſh Cruſt, and of a Conic Shape; only the Baſis is ſomewhat convex, and the Apex of the Cone not directly in the middle, but inclining towards one ſide of the Body. Round the Baſis runs a Line undulating to and again, not unlike a Suture in a Skull. With a little Force the Body parted in two at this Line, the Coheſion being ſlight, and only an inconſiderable part of the *Flint* broke. The lower piece within is furrow'd pretty deep, and ridged alternately, the Ridges gradually riſing and running up into an Apex or Cone in the middle. The upper Piece has a conic Cavity, ridged and furrowed in ſuch manner as to admit and tally with the other. Found in a Stratum of Chalk about fifty Foot deep, in the great Chalk-pit at *Northfleet, Kent.*

c. 251. A *Flint*, cover'd with a dark grey Cruſt. On one part of the Surface is a Line of a pale brown Colour, about $\frac{5}{10}$ of an Inch over, and ſinking near half as much below the Surface. 'Tis undulated to and again, ſo that the Body in that part appears much like the Cerebellum of a Man. Found on *Gogmagog-Hills*, near *Cambridge*.

c.* 251. Another, with the Surface undulated in like manner. Found near *Cambridge*.

c. 252. A greyiſh brown *Flint*, of an obtuſe conic Figure; an Inch in Diameter at the Baſe, and about $\frac{3}{4}$ of an Inch in height. In the middle of the Baſe is a round Flat about $\frac{4}{10}$ of an Inch over, and ſomewhat raiſed above the reſt of the Baſe. The whole Surface beſides is very rough, being thick ſet with very ſmall Pores, excepting certain ſmooth Ridges that run into one another, ſo as to conſtitute an elegant reticulated Work upon it. Found near *Rumford* in *Eſſex*. This ſomewhat reſembles a ſort of Echinus we meet with frequently in our Chalk-Pits; as that N° 247. does another; tho there's no reaſon to think they either of them owe their Form to a Shell.

c. 253. Another *Flint*, of much the ſame Colour. A great part of the Surface riſes into Ridges, which are ſo diſpoſed, that the whole not unaptly reſembles the Surface of the Brain of ſome ſorts of Fowls. Found in a Gravel-Pit in *St. George's-Fields, Southwark*. The Intervals, or thoſe parts that lie betwixt the Ridges, are rough and porous, much as in the foregoing.

c. 254. *A Flint* of a Cylindric Figure, only leſſening a little toward each end. 'Tis three Inches long, and one Inch and a half in Diameter. There runs thro the whole length of it a cylindric Cavity, of about half an Inch in Diameter. The Surface without is of a whitiſh; that of the Cavity yellow. The Subſtance of it, where broken, is grey. Found in a Gravel-Pit near *Greenhithe, Kent*.

c. 255. Another of like Shape in all regards, but ſomewhat ſhorter. The exterior Surface of this is of a yellowiſh brown Colour; and the cylindric Cavity larger than that of the foregoing. Found in a Gravel on the back-ſide of *Golden-Square*.

c. 256. Another, little different in any reſpect, only 'tis conſiderably leſs than either of the former. Found in the ſame Pit with N° 255.

c. 257. A *Flint*, brown, with a Caſt of Green. It conſiſts of three round Stems or Branches concurring in the middle. There is a Hole at the Extremity of each Branch, paſſing on to the middle of the Stone, where all three Cavities communicate together. So that this Stone is no other than a triple-branch'd fiſtulous flinty Cruſt. Beſides that, at the end, in the ſide of one of the Branches, which is ſomewhat longer than either of the reſt, are two pretty large Holes opening into the Cavity of the Branch. Found, among Gravel, near *Marybone, Middleſex*.

c. 258. An orbicular grey *Flint*, about three quarters of an Inch in Diameter. In the middle of it is a ſpherical Cavity, lined with a cretaceous Matter. This was found in a Chalk-Pit near *Charlton*, in *Kent*. Theſe flinty Shells are pretty frequently found. Their Cavities are ſometimes empty, ſometimes fill'd with Chalk *; and ſometimes with a ſomewhat harder white Body †, which, if looſe, ſo as to rattle when the Stone is ſhaken, is what the Antients call Ἀετίτης. I have met with theſe ſeveral ſorts in the Chalk-Pits of *Surrey*, *Kent*, *Eſſex*, and *Hertfordſhire*, from the bigneſs of a Pea, to the Diameter of four Inches.

c. 259. An orbicular brown *Flint*, ſomewhat leſs than the former. There's a ſpheric Cavity in the middle of it; and a round Hole (naturally) from the Surface paſſing into that Cavity. *Iſlington.*

c. 263. A large piece of a concave flinty Ball. The Coat without is browniſh, and very rough and uneven. The inſide riſes up into fine pellucid Bubbles not unlike thoſe of Frog-ſpawn, of different Sizes. They indeed very much reſemble the *botryoid Tubera* on the *Hæmatites*. *Vid. Claſs* 14. N°. 42. Found in a Gravel-Pit on this ſide *Tatnum-Court*, along with N°. 7. *ſupra.* One of the Bubbles being broken, diſcovers a Texture within, very like that of the *Hæmatites*; (*vid. Claſs* 14. o. 42.) and is in like manner ſtriated too: but the *Striæ* in this are extremely fine and ſmall. 'Tis true, the Bubbles of the *Hæmatites* are outwards, and upon the convex of them; and theſe of the *Flints* on the inſide, and concave part: but that's a variety we ſee frequently happening to the very ſame ſort of Matter. Witneſs the echinated cryſtalline Balls, on which the Cryſtals riſe out of the Convex; and the concave cryſtalline Balls, where they are all on the concave part. Nay, both theſe are found in the ſame Place, or Ground, too. *Conf. c.* 19. *ſupra.*

c. 264. Another, little different, only the Bubbles are ſcarcely ſo clear, having in them a ſlight Tincture of Yellow. Found in a Gravel-Pit in *St. George's Fields.*

c. 265. Another Gravel-Pit in *Hyde-Park*. The Bubbles of this have their Surfaces gliſtering, and froſted over with extreme ſmall cryſtal Sparks. There are Sparks very like theſe obſervable on ſome Samples of the *Hæmatites*; particularly on one part of that *Claſs* 14. o. 55.

c. 266. A large black *Flint*, with a white Coat. Being broke in two, there appears in the middle of it an oval Cavity, two Inches in length, and an Inch and half a-croſs. There paſſes a Cylinder of *Flint*, a quarter of an Inch in Diameter, through the whole length of the Cavity, and incorporates with the *Flint* at each end of that Cavity. And at one end of it ariſes a flinty String, of $\frac{1}{10}$ of an Inch in thickneſs, which wreathing itſelf five times ſpirally about the Cylinder, is inſerted into the *Flint* at the other end of the Cavity. The *Flint* conſtituting the Body of the

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* *Bodies thus charged with other Matter are call'd* Γηῶδες, *by* Dioſcorides, *and other antient Naturaliſts.*

† *This the Antients call'd* Callimus.

Stone, of the Cylinder, and the String about it, is all of the ſame Colour and Subſtance. The Inſide of the Cavity is lined, and the Cylinder and String inveſted, with a white flinty Coat, froſted over, in all of them, with very fine ſmall Sparks of Cryſtal. Out of a Chalk-Pit, by *Purfleet*, *Eſſex*.

c. 267. Another large grey *Flint*, with a like Cavity, and Cylinder paſſing long-ways of it. There's a like String alſo ſpirally wreathed about it, tho (in this) only three times. The Cavity, Cylinder, and String, are cover'd with a white Coat, froſted over with cryſtalline Sparks, but ſmaller and leſs conſpicuous than in the foregoing. Found in a Field between *Caſhalton* and *Bennington*, in *Surrey*.

c. 268. A yellowiſh brown *Flint*, near round, and about three Inches and a half in Diameter, the Surface ſomewhat tuberoſe and uneven. In the middle is a Cavity, with a hard Body lying looſe in it, and ratling when the Stone is ſhaken. This is a ſort of *Ætites*, or *Eagle-ſtone*. *Kentiſh-Town*.

There's another *Ætites*, *c.* 299. *infra*. See alſo *c.* 306.

c. 269. A roundiſh *Flint*, outwardly brown; inwardly, as appears by a little Bit ſtruck off, it is of a deep grey, near black. It is about two Inches in Diameter, and of the *Ætites* kind; diſcovering a *Callimus* in the middle of it when ſhaken. I found this on the plough'd Lands near *Marlborough*, in *Wiltſhire*.

c. 270. A round *Flint*, about the bigneſs of a Walnut. 'Tis of a brown Colour, with a Caſt of green. There's a pretty deep Furrow running in manner of a Zone round the middle of it; the Surface, on each ſide of the Zone, for a little ſpace, being porous and uneven. Dr. *Prideaux* found this amongſt the Gravel in the Walks of his Garden at *Norwich*. This alſo is an *Ætites*.

c. 271. Another, very round, and ſmooth. 'Tis of a pale brown Colour. The looſe Stone within is very hard, as appears from the briſk Noiſe it makes when ſhaken. Mr. *Morton*. Found in - - - - - *Hertfordſhire*.

c. *271. Another, a little different from the precedent; only leſs, and of a deep Colour, near black. Found near *Uxbridge*.

c. 272. A roundiſh *Flint*, of a very dark brown Colour. In the middle of it is a large Cavity, into which there paſs two Holes from the Surface. In the ſaid Cavity lies looſe the Shell of ſome ſort of Bivalve, larger than could be introduced in at either of thoſe Holes. Taken out of a Cliff, near *Dover*.

c. 273. A blackiſh flinty *Peble*, in ſhape very much reſembling a human Heart. The Baſis has ſeveral *Foramina*, appearing not unlike the Cavities of the Blood-Veſſels cut off at their Riſe out of the Heart. 'Tis two Inches and a quarter in length. Found upon the Strand near the Pier at *Dover*.

c. 275. A ſmall flinty *Peble*, which being broken, diſcovers a porous ſcabrous Nucleus in the middle of it, which is contain'd in a grey Cruſt, a quarter of an Inch in Thickneſs, and that involved in another of a yellow Colour, $\frac{1}{20}$ of an Inch thick. The

Cruſts including the Nucleus are of a cloſe flinty Texture. Found in a Gravel-Pit in *St. George's-Fields, Southwark.*

c. 276. A *Peble* about the bigneſs of a ſmall Walnut, of a browniſh yellow in moſt places; but where the outward Cruſt has been worn off, it appears of a very light yellow. It has ſome degree of Tranſparency; and in the whole reſembles very much a piece of Amber. *Epping-Foreſt,* near Lord *Caſtlemain*'s Houſe.

c. 277. A *Flint* with ſome degree of Diaphaneity in all parts, but the middle of it is very diaphanous, with ſome ſmall Spots of red. This is ſurrounded with a Cruſt of brown, ſet pretty thick with grey Spots. Found in *St. George's-Fields, Southwark.*

c. 278. An oval Plate cut off the foregoing, which takes a fine Poliſh.

c. 280. A Plate, cut off a flinty *Peble* found near *Iſlington.* It takes a good Poliſh. There's a cellular Texture in this finely ſhewn; and 'tis a beautiful Stone.

c. 282. A Plate, cut off a *Flint* having ſome degree of Diaphaneity. The Ground of it is red, and thick ſet with Spots of yellow. Found in *St. George's Fields, Southwark.*

c. 283. A *Flint* cut into the Form of a Knife-haft. 'Tis partly diaphanous, and beſides, ſhews a beautiful Mixture of Colours, being variegated with white, yellow, green, brown, red and purple. 'Tis very hard, bears a good Poliſh, and is as fair an Agate as is generally ſeen.

c. 285. A Plate cut off a flinty *Peble* ſemi-pellucid, the middle part of it is grey, thick ſet with black Spots, and ſome few white. Round this are Streaks and Spots of red, white, and yellow, in a Ground of a lightiſh brown Colour, with a Bluſh of Green. Found in the Road to *Hamſtead,* half a Mile on this ſide the Town.

c. 287. A Plate, cut off a flinty *Peble*; the greater part of the Ground of a deep grey, approaching black, finely variegated with red, yellow, purple, and white.

c. 290. An oval Plate, cut off a flinty *Peble,* variegated with grey, white, yellow, purple; with a good Poliſh. The Stone found in the Road near *Hamſtead.*

c. 294. An oval Plate, cut off a flinty *Peble* found on *Hamſtead-Heath.* 'Tis finely variegated with white, purple, red, yellow, and brown; and takes an excellent Poliſh.

c. 295. Another, ſemi-pellucid; the Ground an horney grey, but having in ſome parts a Caſt of Yellow. There are in it five or ſix white Streaks or Plumes, lying parallel to each other, and paſſing a-croſs the Plate. The Poliſh is very good. The flinty *Peble* off which it was cut, was found likewiſe on *Hamſtead-Heath.*

c. 296. Another Plate very beautiful, and its Poliſh admirable. 'Tis variegated in a very lovely manner with white, red, purple, and yellow. From the ſame Heath.

c. 297. One half of a *Flint*, that was of a ſhape near orbicular. 'Tis hollow, and lined with Spar, ſhot into Cryſtals, pellucid, and very ſmall. Without theſe is a flinty Cruſt of a pale brown Colour, $\frac{3}{8}$ of an Inch in thickneſs; and, over all, another Cruſt, ſomewhat paler, and $\frac{1}{8}$ of an Inch thick. The Body itſelf is two Inches and a half in Diameter. *Greenhythe.*

*c.*298. A flinty *Peble*, of a compreſs'd flat ſhape, almoſt triangular. The three Corners are of a pale yellow Colour; the reſt of the Surface of a reddiſh brown. Found near *Hackney.*

c. 299. A *Flint*, of a light brown Colour, pretty round, on the Surface ſmooth, except that there are ſome ſmall Cavities in it. It is about an Inch and half in Diameter. It is of the *Ætites* Kind, having a looſe *Callimus* in it, which rattles and makes a noiſe upon ſhaking the Stone. Found near *Marybone*, *Middleſex.*

c. 300. A Pair of *Stones*, cut Diamond-wiſe, poliſhed, and fit to ſet. They are tranſparent, clear, and of a good Water. They were cut both out of the ſame *Flint;* which was found near *Aſhburn*, in the *Peak.*

c. 301. A ſmall oval Plate, cut off a flinty *Peble*, and poliſhed. The Politure is very good; and 'tis prettily variegated with a pale grey, blue, yellow, and purple. Found in the Gravel-Pit at the Top of the Hill, near the Town, on *Hamſtead-Heath.*

c. 302. Another like Plate, with much the ſame Colours, but variegated in a different manner. The Stone found in the Road betwixt *Deptford* and *Southwark.*

c. 303. Another, with like Colours, only the Yellow is darker, with a Caſt of Green. The Stone off which it was cut, was found along with the precedent.

c. 304. Seven and twenty flinty *Pebles* cut into oval Figures, and poliſh'd. They are hardly ſo big as Pigeons Eggs. Several of them are of the Agat kind; and of a fine corneous, or ſemipellucid Grey. The reſt are moſt curiouſly variegated with almoſt all ſorts of Colours. They were found in ſeveral Parts, of *Surrey* and *Middleſex*, near *London.* The Deſign of preſerving theſe, is to ſhew the inner Conſtitution of this ſort of Stone, when thus cut, and laid open to view; and the Method and Proceſs in the Formation of it.

c. 305. An oval Plate, cut off a flinty *Peble.* Found on *Winchmore-Hill*, not far from *Southgate*, *Epping-Foreſt.* The Ground of this Plate is of a light grey Colour; but is ſpotted with a darker grey, and with black. One of the black Spots is long, ſlender, and, as the Lapidary fancies, reſembles a Dagger, or Bayonet. Towards one end is ſeen a pretty Intermixture of red and yellow.

c. 306. A ſmall round *Flint*, broken ſo as to ſhew 'tis compos'd of three Cruſts or Spheres; the outermoſt white, the next corneous, and the innermoſt white. In the Center is a Cavity, in which is a Core of a grey Colour, affix'd on one ſide to the innermoſt Cruſt. Had this been looſe, as they frequently are, it would have ſhook; and then the Body would have been call'd an *Ætites*, of which ſort it truly is. *Deptford.*

c. 307. A black *Flint*, cover'd with a white Cruſt, off which Flakes ſeem to have ſtarted in ſeveral parts of the Surface, moſt of which have left ſmall Cavities, in figure of a Creſcent or Half-Moon. Found, amongſt ſeveral others that had like ſemilunar Cavities, near *Cambridge*.

c. 308. A ſmall *Peble*, yellow, with numerous ſmall Specks of red. From the Shores near *White haven*.

c. 309. Another, of a duſky red Colour, with ſmall Specks of a brighter red. From the ſame Shores.

c. 310. A Plate cut off a flinty *Peble*. Found on *Hamſtead-Heath*, finely variegated with yellow, white, and red.

CLASS IV.

Talc and Talky Bodies.

PART I.

EXTRACT.

A *Claſſical Diſtribution of the* Talky *Bodies according to their Figures, Textures, and Relations to each other.* Part 1.

Talc *differs from all other native Foſſils in this, that it is flexible and elaſtic; and all* Talky *Bodies are ſo more or leſs, anſwerable to the greater or leſs Quantity of the* Talc *they have in them.* Part 1.

Talc in Ragſtone, *b.* 70.
—— in blue Slate, *b.* 80.
—— in the Piped-waxen Vein, ‡ *d.* 9.
Talc in Black-Lead, *Part* 1.
—— in various other Foſſils. *See the Index of the firſt Part of this Claſs.*

CLASS IV.

Talc and Talky Bodies.

PREFACE.

THESE *are either, 1ſt, Regular in their Texture and internal Conſtitution; but not in their exterior Figure. As,* 1. *The fibrous or filamentoſe Bodies, which are compoſed of parallel Threads.*

2. *The piped-waxen Vein, that is compoſed of parallel Tubules.* 3. *The* Ludus Helmontii, *which is compoſed of* Talky *Plates forming Cells, that are filled with ſtoney Matter.* 4. Talc *and the* Micæ, *which are compoſed of parallel Plates; all which Bodies have their exterior Surfaces irregular and uncertain. Or, 2dly, Regular, both in their internal Conſtitution, and in their external Figure: As,* 1. *The* Selenites, *which is compoſed of parallel Plates, and is externally of a Rhomboid Figure.* 2. *The* Belemnites, *which is compoſed of various Cortices including one another, and is externally of a Conoid Figure.*

One Property Talc *has that is peculiar; and in which it differs from all other Native Foſſils: which is, that it is flexible and elaſtic, being diſpoſed to bend; but return to its original ſtreight Poſture as ſoon as the Force that bends it is withdrawn. The ſame Property is obſerved in all* Talky *Bodies; but more or leſs, according as they contain more or leſs* Talky *Matter in them. The Plates of the* Selenites, *and Threads of the fibrous Bodies,* Claſs 4. Part 2. *bend much more eaſily than the* Talky *Spar; and the* Septa *of the* Ludus Helmontii, *the Pipes of the piped-waxen Vein, and the Cortices of the* Belemnitæ, *have ſo little* Talc *incorporated with the Spar that compoſes them, that it is no wonder they are not flexible.*

Wadd or Black-Lead apparently holds a conſiderable Proportion of Talc *in it; and the finer parts of it, when cut into thin Plates, or into Threads, bends, and is elaſtic. The* Talky *Sorts of Slate, ſuch as that* b. 80. ſupra, *have likewiſe ſome ſmall degree of Flexibility and Elaſticity. This elaſtic Diſpoſition diſcriminates the* Talky *Foſſils from all others that are Native. Indeed there are none beſides that are flexible, except only the Virgin Metals; and they are not elaſtic.*

CLASS IV. PART I.

The ſquamous or foliaceous Talc and Mica.

Conf. Claſs 4. P. 1.

EXTRACT.

C. 1. *The ſeveral Names given to theſe Bodies by Writers and others.*

Lapis Specularis, Iſing-Glaſs, or *Muſcovy-Glaſs,* along with a black gloſſy *Talc,* in a ſparry ſemi-pellucid Stone, ⊖ *d.* 1.
Talc like the *Venetian,* ⊖ *d.* *7.
Galaicos Argyrodamanti ſimilis, Plinii, ⊖ *d.* 27.
Wormſeed-Stone, a *Talky* Body, related to the Porphyry Kind, ⊖ *d.* 36.

Granite, like that from *Arabia*, ⊖ *d*. 38. *38. †38.
Warming-ſtone, ⊖ *d*. 7.
Sulphur Earth, ⊖ *d*. 41.
Call, ⊖ *d*. 45.
Mica argentea, the white or ſilvery *Mica*; *Glimmer*, or *Cat-Silver*, ⊖ *d*. 1. 2. 4. 9. 10. *10. 29. 30. 31, *& ſeq*. to 39.
Mica aurea, the gilded or yellow *Mica*, ⊖ *d*. 16, *& ſeq*. 25. 42.
Mica gryſea, the grey *Mica*, ⊖ *d*. 7. 28. 38. *38. 43.
Mica nigra, the black *Mica*, ⊖ *d*. 11. 12. 13. 14. 15. 16. 22. 23. 25. 44. 45.

C. 2. *The various Bodies in which Talc is found*,

Talc in a ſaline Earth, *g*. *3.
Talc in Loam, *a*. 100.
—— in Sand, †*a*. 7.
—— in Strata of Stone, *b*. 1. 31. 32. 60. ⊖ *d*. 14. 38. 39.
—— in white Slate, or Flag, *b*. 85.
—— in Stone mix'd with Coal, *g*. 16.
—— in Marble, * *b*. 11. 19.
—— in Geodes, † o. 10.
—— in the *Ludus Helmontii*, x *d*. 5.
Talc in various other Foſſils. *See the Index of the general Reflections at the Head of this fourth Claſs*.
Mica argentea, in Stone, ⊖ *d*. 4. 5. 9. *10. 31. 37.
—— together with Spar, ⊖ *d*. *7. 29. 44.
—— with Iron, ⊖ *d*. 44.
Mica aurea in Spar, ⊖ *d*. 16. 17.
—— in a gritty friable Stone, ⊖ *d*. 20.
—— in a hard Stone of a ferruginous Colour, and holding upon tryal, Sulphur, and Tin, ⊖ *d*. 21.
Black Mica in Spar, ⊖ 11. 16. 22. 25.
—— in Stone and Spar, ⊖ *d*. 14.
—— in Stone, ⊖ *d*. 12.
—— mix'd with a white diaphanous Sand, ⊖ *d*. 23.
—— ſuſpected to hold Silver, ⊖ *d*. 45.

C. 3. *Of the Uſes of Talk*.

Talc reducible to an impalpable Powder, of uſe in caſting of Metals, ⊖ *d*. 14.
Of the Medical and Chirurgical Uſes of Talc.
Of the Mechanical Uſes of Talc.

C. 4. *Of the Compoſition of* Talc; *and of its Origin and Formation*.

Talc is, in ſpecific Gravity, to Water, as $2\frac{6}{10}$ to 1. It is flexible and elaſtic. In which it differs from all other Foſſils; and, which is remarkable, ſomewhat approaches the Tenor of Animal and Vegetable Subſtances.

It ever concretes, and is form'd into Plates, or Flakes; in which likewiſe it agrees with *Wood, Shells, Bones,* and other vegetable and animal Subſtances.

The leſſer Maſſes of it, that are lodg'd in Sparry, Stoney, and other like Bodies, diſperſedly, from their ſhining and glimmering more than the other Parts of thoſe Bodies, were an Inducement to the Writers of Foſſils to give thoſe Bodies the Name of *Mica*, and *Glimmer*.

Theſe leſſer Maſſes do not differ from thoſe that are larger, that have the Plates of greater Extent, and are commonly call'd *Talc*, in Conſtitution, or any other Reſpect, except only in Bigneſs.

Talc, when homogeneous, pure, and free from extraneous Mixtures, is of a white, ſilvery, Gloſſy Complexion: and the Plates of it are generally plain, ſmooth, and pellucid. Such is the *Lapis Specularis*, or that ſort that is call'd *Muſcovy-Glaſs*.

As to the yellow *Talc*, the Tryals I have hitherto had opportunity of making, have not inform'd me to what that Colour is owing: whether to the Acceſſion of Sulphur, or of ſome Metal.

The black and grey Colours ariſe from an extraneous Stoney or Mineral Matter, that is ſo intimately mix'd and incorporated with the *Talky*, as, being ſuperior to it in Quantity, to give the form'd Maſs not only a different Complexion, but even frequently a Tenor, Form, and Diſpoſition, different from what the *Talky Matter* ever aſſumes, when pure and free from ſuch Admixture.

The Maſſes of the purer *Talc*, particularly thoſe which are incorporated with Sparry Matter, conſiſt of ſeveral Plates or Flakes ſet, Face to Face, contiguous to each other, ⊖ *d.* 1.

The *Talky Flakes* in the Strata, were all form'd before the Subſidence: and ſettling down, along with the Sand, and other conſtituent Matter of the Strata, they became repoſited amongſt them. The Weight, Denſity, and Reſiſtance of the Matter of thoſe Strata is ſuch, that the *Talky Flakes* could not have been form'd ſince the Compilation of the laxer Strata, *e. gr.* of *Earth, Sand,* and *Gravel*. And for thoſe of *Stone, Slate,* and the like, their Solidity would be a ſtill greater Obſtacle to the Formation of the *Talky Plates* in them. Thoſe Plates lie flatways, and parallel to the Site of the Strata, as all flat Bodies conſtantly do in the Strata: and indeed in the very manner that flat Bodies are wont to be repoſited, as ſettling down from a Fluid, ⊖ *d.* 1.

The Flakes of the *Talc*, found incorporated with the Spar, and Vein-Stones, in the perpendicular Fiſſures, are accommodated to the Tenor of thoſe Bodies. This was all repoſited originally amongſt the common conſtituent Matter of the Strata, either in ſingle Corpuſcles, or Maſſes, ſo ſmall as to paſs the Interſtices and Pores of the Stone; through which they, as indeed all the Matter now found in thoſe Fiſſures *, were drain'd, in Tract of Time, by the Water that is continually paſſing thither, in order to the Supply of Springs and Rivers. ⊖ *d.* 11.

C. 5. *The Places where the* Talc *and* Micæ *are found.*

Hamſtead-Heath, ⊖ *d.* 10 *.
Loving-Land, Suffolk, ⊖ *d.* 17.
Oxendon, Northamptonſhire, ⊖ *d.* 4.
Weſton, Northamptonſhire, ⊖ *d.* 28.
Crick, Northamptonſhire, ⊖ *d.* 24.
Buckland, Hertfordſhire, ⊖ *d.* 30.
- - - - - *Bedfordſhire*, ⊖ *d.* 18.
Bullock's-Hill, Bedfordſhire, ⊖ *d.* 19.
Shores near *Skegneſs, Lincolnſhire*, ⊖ *d.* 3. 5. 12.
Near *Hull*, ⊖ *d.* 8. 9. 10. 13.
Shores near *Outhorn, Yorkſhire*, ⊖ *d.* *1. ‡7. 11. 16. 22. 26.
Poul, Yorkſhire, ⊖ *d.* 25.
The Top of *Pendle-Hill*, ⊖ *d.* 37. *Lancaſhire.*
Eden-Hall, Cumberland, ⊖ *d.* 38.
Skrees, Cumberland, ⊖ *d.* 38*.
Keſwick, Cumberland, ⊖ *d.* 43.
Northmoulton, Devonſhire, ⊖ *d.* 44.
- - - - - - *Devonſhire*, ⊖ *d.* 14.
Cornwall, ⊖ *d.* 21.
Minhiniat, Cornwall, ⊖ *d.* 45.
River *Palmer*, ⊖ *d.* 32. *Cornwall.*
St. Clear, Cornwall, ⊖ *d.* 35.
Near *Caſtock, Cornwall*, ⊖ *d.* 36.
Roach, Cornwall, ⊖ *d.* 29.
Hinxton, Cornwall, ⊖ *d.* 31. 39. 42.
Jerſey Iſland, ⊖ *d.* 20.
Newcaſtle upon Tyne, ⊖ *d.* 27.
Hackneſs, Yorkſhire, ⊖ *d.* 23.

CLASS IV. PART I.

The ſquamous foliaceous Talc *and* Mica.

PREFACE.

QUæ Geo. Agricolæ *Mica* dicitur hæc Geo. Fabricio de Reb. Metall. p. 28. appellatur, "*Sterile nitidum*, album, nigrum, "flavum."

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* *Nat. Hiſt. of the Earth, Part* IV. *Conſ.* 4.

No e,

None, of theſe which follow, in this Catalogue, are in Form of Nodules, or inveſted with a Cruſt. There are ſeveral, found on the Shores, that have been worn and rounded by the Agitation of the Sea: and one, [⊙ *d.* 4.] *found, among Gravel, in a Midland-Country, rounded by the Water of the Deluge departing.* ⊙ *d.* 1. *was out of a Vein, or perpendicular Fiſſure. Moſt of the reſt were Parts of Strata.*

Talcum & Micæ. [⊙ *d.*]

⊙. *d.* 1. Part of a large white ſparry ſemipellucid Maſs, found near *Backwell* in the *Peak*, containing, in ſeveral Parts of it, certain Maſſes of a white or ſilvery gloſſey *Talc*. Some of them are of a conſiderable Extent, the largeſt being an Inch and $\frac{1}{4}$ in length and an Inch broad. They eaſily ſplit into thin tranſparent *Laminæ* or Plates: and are of that ſort of Body which is call'd by *Pliny Lapis ſpecularis*, in the Shops *Iſing-Glaſs*, and *Muſcovy-Glaſs*. In one part, the *Sparry* and *Talky Matter* appear to be incorporated together, and equally mix'd. There are interpos'd in ſome parts of it, ſmall, black, gloſſey Maſſes.

In this, and the Body ⊙ *d.* 30. the Plates of each diſtinct Maſs lie parallel to one another: but the Maſſes themſelves lie croſs, and in Poſtures as different as may be. Whereas in Stone, Slate, and other Bodies that lie in Strata, the Talky Flakes lie parallel to the Surface of the Strata. Even thoſe two Bodies ⊙ *d.* 10*, and ⊙ *d.* 28. that were found, tho' amongſt Gravel, yet lying parallel to the Site of the Strata, have the Talky Plates lying parallel to each other, and to the Surfaces of thoſe Strata. And in thoſe Maſſes that were found, beat off from the Strata upon the Shores, ſuch as ⊙ *d.* 2, 5, 6. the Talky Plates are diſpoſed in the ſame Method. The reaſon of which will appear very plain to any one that knows that *Pebles* and *Flints* are of a croſs-grain'd Conſtitution: and break irregularly, and uncertainly, *Conf. Pref.* to *Claſs* 3. Whereas the Stone of the Strata that has Talky Plates in it, breaks with a Grain, and parallel to thoſe Plates.

⊙ *d.* 2. A Maſs whitiſh, with a Caſt of brown, thick ſet, in all parts, with ſmall Spangles of *Talc* of the ſame ſort with that of the precedent. From the Shores near *Outhorn, Yorkſhire.* I have ſeen of the very ſame from the Shores of *Humber*, near *Hull.* This ſeems to be a ſort of the *Mica* of *Agricola* *. The *Germans* call it *Glimmer*, and *Catzilver*; the *Engliſh, Cat-ſilver:* and indeed *Mica Argentea* may not be an improper Name to diſtinguiſh it from the yellow ſort, which the Mineraliſts call *Mica aurea.*

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* In Bermanno, p. 696. "Quiddam candidum Scintillarum „ modo in hoc lapide lucet.——Colore Argento ſimile ſit."

⊙ *d.* 3. A Piece of a larger, little different. From the Sea-Shores betwixt *Skegneſs* and *Ingoldmills, Lincolnſhire.* Mr. *Morton.*

⊙ *d.* 4. Another Maſs of a coarſer Grain, whitiſh, with Spots of a light Brown, and ſmall Spangles of the *Silver Talc.* Found near *Oxenden* in *Northamptonſhire.* Mr. *Morton.*

⊙ *d.* 5. A ſmall oval grey Maſs, very thick ſet with like Spangles, but ſomewhat larger. Found on the *Lincolnſhire* Shores with N° 3.

⊙ *d.* 6. Another larger, otherwiſe a little different. From the ſame Shores.

⊙ *d.* 7. Another flat oval Stone, in which the *Talky Matter* conſiſts of parts very ſmall and fine, and is throughout incorporated with the grey Matter of the Stone. 'Tis thick ſet with ſmall round ferruginous Bodies, ſtanding out ſomewhat above the ordinary Surface of the Stone, being probably harder, and ſo having better ſuſtain'd the Agitation of the Sea, which the Stone appears to have undergone. Still from the ſame Shores.

⊙ *d.* 7*. Another like Body, found along with the precedent. 'Tis cut and poliſh'd, to ſhew the interior Conſtitution of it.

⊙ *d.* 7†. A Piece of dark grey gloſſy *Talc,* with ſome white Spar interpos'd betwixt the Flakes of it. From - - • - - - - in *Yorkſhire,* where it is in great plenty. 'Tis called there the *Warming-Stone,* they laying it in their Beds at their Feet in cold Weather. When once heated, it retains it a great while.

⊙* *d.* 7. A flakey Maſs, grey, with a Caſt of Green; in which the *Talky Matter* makes the greateſt part of the Maſs: and is equally diffuſed and incorporated with the other Matter of it. This very much reſembles what is ſold in the Shops for *Venetian Talc:* and differs from the *Lapis ſpecularis,* or *Muſcovy-Glaſs,* ⊙ *d.* 1. only in this, that the Plates of that are flat and plain, whereas theſe are convoluted and inflected: that is homogeneous, pure, and uniform. This has a greeniſh mineral Matter incorporated with it; which is the caſe of ſeveral of the following.

⊙ ‡*d.* 7. Another, in which the Parts of the *Talc* are extremely ſmall, but diſtinct, tho' inferior in Quantity to the reſt of the Maſs. *Outhorn Shores, Yorkſhire.*

⊙ *d.* 8. Another, very ſmall, otherwiſe not different from ⊙ *d.* 7. Found on the Shores of the River *Humber,* near *Hull.*

⊙ *d.* 9. A dusky brown Maſs, with little Spangles of the ſilver *Talc* in it. From the ſame Shores of *Humber.*

⊙ *d.* 10. Another, of a light brown Colour, conſiſting of ſeveral Plates lying one upon another: and thick ſet with very ſmall Flakes of the ſilver *Talc.* From the ſame Shores.

⊙ *d.* 10*. A Piece of a Gritty-Stone, of a deep red Colour, having in it very many Flakes of a white *Talc,* larger than thoſe of the precedent. Found in the Gravel-Pit, near the *Bowling-Green* on *Hamſtead-Heath.*

⊙ *d.* 11.

Θ.*d.* 11. A white ſparry Maſs, thick ſet with Grains of a black gloſſy Talk. Found upon the Shores near *Outhorn*, in *Yorkſhire.* This ſparry Maſs appears to have been beat out of a Vein of the Neighbouring Cliffs: and, tho' the talky Plates in it lie in ſomething of a Method, yet not near ſo regularly as they do in the Strata. And they lie in much the ſame Manner in thoſe Θ. *d.* 25, 26, 31, 32, 33, 34, 35, 39, 40. Alſo in the Maſſes Θ.*d.* 14. 15. 24. 29.*38. 44. which were all out of the Veins, or Perpendicular Fiſſures.

Θ.*d.* 12. A Maſs, grey, and having throughout a very plentiful admixture of a black gloſſy Talc. From the Sea-Shores of *Lincolnſhire*, between *Skegneſs* and *Ingoldmells.*

Θ.*d.* 13. Another, leſs, otherwiſe not much different. From the Shores of *Humber*, near *Hull.*

Θ.*d.* 14. A piece of Stone conſiſting partly of a Spar, white, with a Caſt of red: and partly of a black gloſſy Talc. The Talc is very looſe and brittle, the Flakes of it ſcaling off with the ſlighteſt force imaginable. 'Tis eaſily reducible into an extremely fine and impalpable Powder: And may fitly ſerve to keep any Metal that is caſt, from ſticking to the Mould. By reaſon of the Ponderouſneſs of it, ſome have thought it contain'd metallick Matter in it; but, upon Tryal, that proves a miſtake; nor is there any Metal in the ſame Pits where it is found; which are at . . . . . . in *Devonſhire.* There are ſeveral whole Strata of it lying from near the Day to a great Depth.

Θ.*d.* 15. Another piece, conſiſting entirely of the ſame black Talc, without any interpoſition of Spar. Found with the former.

Θ.*d.* 16. A whitiſh ſparry Maſs, having in it many Spangles of a ſhining Gold-colour'd Talc, and ſome of a Black. This may not unfitly be call'd *Mica-Aurea. Vid.* N° 2. From the Shores near *Outhorn* in *Yorkſhire.*

Θ.*d.* 17. A Maſs conſiſting chiefly of a yellow Talk, ſomewhat paler than the former. There are amongſt it a few Grains of a whitiſh Spar: and on one ſide there adheres to it a pale brown hard Clay. From *Lovingland*, on the Coaſts of *Suffolk.*

Θ.*d.* 18. A piece of fine Sand-Stone, having a large Proportion of a pale yellow Talc, in very ſmall Spangles, throughout all parts of it, ſent me, for Silver-Ore, from . . . . in the Counteſs of *Kent*'s Eſtate in *Bedfordſhire.*

Θ.*d.* 19. A Maſs of yellow ſhining Talc, with a yellow earthy Matter mix'd with it. From *Pullock's-Hill*, near *Selſoe*, two Miles from *Ampthill*, *Bedfordſhire.*

Θ.*d.* 20. A gritty friable brown Stone, with ſmall Spangles of a pale yellow Talc. From the Iſland of *Jerſey.* Mr. *Southwell.*

Θ.*d.* 21. A very hard Stone, of a ferruginous Colour, in which is a conſiderable Number of Spangles of Talc of a Gold Colour. Upon tryal it yields ſome Sulphur, and a very little Tin. 'Tis found in vaſt Quantities, at . . . . . . in *Cornwall.*

Θ.*d.*22. A piece of a grey Maſs, compos'd partly of a white Spar, and partly of black Talky Spangles, in near an equal Proportion. Found about $\frac{1}{4}$ of a Mile South of *Outhorn*, *Yorkſhire*.

Θ.*d.*23. A piece of a black gloſſy ſhining Talc, with ſome intermixture of a white diaphanous Sand. From *Hackneſs* Shores, *Yorkſhire*.

Θ.*d.* 24. A Talky Maſs, from *Crick*, *Northamptonſhire*. 'Tis of a Sandy Colour. The Talky parts break in Flakes, not unlike the *Lapis Judaicus*.

Θ.*d.* 25. A whitiſh ſparry Maſs, with Spangles of a Black, and ſome few of Gold-colour'd Talc. This is little different from Θ. *d.* 16. only that the Spar has a reddiſh Caſt, and the Golden Micæ are fewer. Found near *Paul*, in *Yorſhire*.

Θ.*d.* 26. A Maſs made up of black, white, and reddiſh Grains of a Talky Spar. Found near *Outhorn*, *Yorkſhire*.

Θ.*d.* 27. A Talky Maſs, grey, and flaky, with a very ſhining Silvery Gloſs. There are in it ſmall Knots, the biggeſt not exceeding the Size of a common Pea. Some of them of a deep red, others of a black Colour. From *Scarborough*, *Yorkſhire*. It loſes not the Gloſs in Calcination, but burns to a Subſtance more approaching a Gold Colour: and is ſo very like Litharge, as not to be diſtinguiſhed by Refiners, who have made many Tuns of that Commodity. Sent me by Dr. *Cay*, who ſuppoſes it to be the *Galaicos Argyrodamanti Similis*. *Plin. Nat. Hiſt. L.* 37. *C.* 10. From *Newcaſtle* upon *Tyne*.

Θ.*d.*28. A grey Silver Mica, very thick ſet with ſmall ſhining Spangles. *Weſton* Gravel-Pit, *Northamptonſhire*. Mr. *Morton*.

Θ.*d.* 29. Spar, white, and brown; with Plates of a fine white gloſſy Talc in it. *Roach*, *Cornwall*. It ſeems to have been taken out of a Vein.

Θ.*d.* 30. Part of a coarſe, brittle, ſparry Maſs, full of Flakes of Talc, very fair, white, with an Eye of yellow. *Buckland*, near *Royſton*, *Hertfordſhire*.

Θ.*d.*31. Mica argentea. *Hinxton*, *Cornwall*.

Θ.*d.* 32. Mica argentea. This is in Appearance very much like the *Granite* of *Arabia*. See the Catalogue of the Exotic Foſſils. Found in the River *Palmer*, *Cornwall*, near the Sea: and worn to an exact Round or Globoſe Form, by the Motion of the Water.

Θ.*d.* 33. *Mica argentea*, with a whitiſh Spar. Found in the ſame River.

Θ.*d.*34. *Mica argentea*, in a Stone of a blackiſh Ground, ſpotted with light brown. *St. Cleer*, *Cornwall*. This ſort is alſo found on *Rowtore*, in the ſame County.

Θ.*d.* 35. A Stone, porous, grey, with a Caſt of Green. There are Plates of a white gloſſy Talc in it. Found in the River *Palmer*, *Cornwall*.

Θ.*d.* 36. A Stone, finely variegated with Spots of red and white; with extremely ſmall Flakes of white Talc in it. Found on a great Hill near *Caſtock*. 'Tis alſo not uncommonly found in other Parts of *Cornwall*: and is called there, *Wormſeed-Stone*; being thick ſet with ſmall Bodies, not unlike the *Semen Santonici*, or *Wormſeed*. 'Tis ſomewhat related to the *Porphyry-kind*.

Θ.*d*. 37. Brown Stone, with Spangles of the *Mica argentea* in it. From the top of *Pendle-Hill, Lancaſhire*.

Θ.*d*. 38. A Maſs ſpotted with black and white, and having in it Micæ of a grey Talc; very much reſembling the *Granite* of *Arabia*. See the Catal. of the *Exotic Foſſils*, Part 1. γ. 5.— This was brought from *Eden-Hall*, in *Cumberland*, where 'tis found in vaſt Quantity.

Θ.*d*. *38. A Maſs, white, ſpotted with black, having grey Micæ in it. This is exactly like the *Granite*. 'Tis found in Fiſſures in the *Skrees, Cumberland*.

Θ.*d*. †38. A Maſs little different; only the Ground has a Caſt of red. There are Fragments of it, of conſiderable Bulk lying near the *Skrees, Cumberland*.

Θ.*d*. 39. A gritty Stone, ponderous, of a dusky red Colour; with ſilver Micæ in it, and ſmall Bits of a white Cryſtallin Spar. This is not much different from the *Porphyry*. *Hinxton, Cornwall*.

Θ.*d*. 40. A Mica, white, with a Caſt of yellow. *Loo-Beach, Cornwall*.

Θ.*d*. 41. Another, from ——— in the *Peak*; where 'tis call'd *Sulphur-Earth*.

Θ.*d*. 42. *Mica aurea*. *Hinxton, Cornwall*.

Θ.*d*. 43. A grey *Mica*. *Keſwick, Cumberland*.

Θ.*d*. 44. A Maſs, red, and ponderous; with white Spar intermixed, and Flakes of a black gloſſy Talc. From the Mine at *Northmoulton, Devonſhire*. This ſeems to hold Iron. The Workmen there give this the Name of *Call*.

Θ.*d*. 45. A black gloſſy Mica. This is found in great Quantity at *Minhiniat, Cornwall*. About fifty Years ago 'twas judged to hold Silver, and work'd for that Mettal.

CLASS IV. PART II.

Selenites Rhomboidalis.

EXTRACT.

Selenites, found lodg'd in Sand-Stone. *b*. 13.

——— found in Clay. *a*. 104, 105. *d*. 1. &c ſeqq.

——— found particularly in the Clay near the Wells of purging Waters at *Epſom, Dulwich*, &c. and therefore hath been ſuppoſed to impart the cathartic Property to thoſe Waters: but erroneouſly; the *Selenites* being ſo far from being cathartic, that it is aſtringent. *d*. 44. *Append*. *d*. 49.

Clay in *Selenites. d.* 17. 33. 34. 54.
Spar, incorporated with the *Selenites. d* 46.
Marcaſit, incorporated with the *Selenites. d.* 46.
Pyrites, adhering to the *Selenites. d.*31.

C. I. Of the *Rhomboidal Selenites* of *Steno Prodr. p.* 79.

SECT. I. *With the* Rhombs *ſingle or ſeparate.*

The *Rhomboid Selenites* is cautiouſly to be diſtinguiſh'd from the *Selenites* of Dr. *Scheuchzer*, (*Specimen Lithogr. Helvet.* p. 29.) and the *German* Naturaliſts; which is only a Spar: externally of no certain or regular Figure, but breaking into *Rhomboidal* Maſſes.

Whereas this is ever externally of a *Rhomboid* Shape: and is properly a Nodule. 'Tis indeed one of the moſt remarkable of all the figur'd ones. When entire, 'tis conſtantly uniform: and has no marks of Adheſion to any Solid. Conſequently this Body was form'd in Water; in which 'twas wholly free during its Concretion, and not contiguous to any ſolid Body whatever. *d.* 1. *& ſeqq.*

'Tis frequently met with very ſmall, and indeed of all ſizes, from the Weight of a Grain, to that of a Pound, or thereabouts; but is ever of a Rhomboidal Shape, tho with ſome diverſity.

Now the Body being conſtantly of the ſame Figure, of whatever Magnitude it happens to be, 'tis evident that every Advance, in the Formation of it ſucceſſively from the very Initia and firſt Stamina, is in a Rhomboidal Form; the Proceſs here being much the ſame as in the Cryſtallizations of the common Salts, *Vitriol*, *Alum*, and the reſt; that are ever obſerv'd to be of near the ſame Figure, at what ſize ſoever a ſtop is put to the Progreſs of their Concretion.

The ſame is further evident, by a blueiſh Clay in *d.* 19. which, intervening whilſt the Body was in the Act of Formation, and only about $\frac{1}{3}$ of the Matter, that finally compoſed the whole, was concreted, diſtinguiſhed and ſhew'd the Figure of the Surface of the Body when of but about $\frac{1}{3}$ of the Dimenſions that the whole at length attain'd to. And the Surface of this interior Rhomboid is exactly of the ſame Figure with that of the exterior: and every part of that at equal diſtance from this. The blueiſh Clay abovemention'd, appears plainly to be of like ſort and Conſtitution with that of the Stratum wherein the Body lay. Indeed, in ſplitting and breaking the Selenitæ, found in ſeveral Places, I have commonly obſerved incorporated with them Particles of *Clay* no ways different from that of the Stratum, in which the Selenitæ were lodg'd, frequently very thick in great Numbers, and with ſuch other Accidents, as clearly to indicate they were all form'd and finiſh'd before ever they were repoſited there, or the Strata compiled. In truth the Sea-Shells, of ſeveral ſorts, that are commonly found lodged together with them, point forth the Deluge for the time of their Formation; when, as well as all other terreſtrial Matter, that *Clay* was ſuſtain'd in the Water, wherein theſe, and all other Nodules were form'd *: and ſo it could not well be avoided but that ſome of it muſt intervene in the Concretion of the Selenites, and be incloſed in the Body of it. Conſidering the Circumſtances of their Formation; 'tis rather a Wonder that ſo many of them are free, clear, and tranſparent, as we commonly find. In concluſion, the Selenitæ, Shells, and Clay, ſettling all down, compiled the Stratum.

The *Rhomboid Selenites*, is compoſed of parallel Plates, tranſparent, very thin, flexil, elaſtic: and that are eaſily ſplit, and parted from each other. The Plates are compos'd of ſtreight parallel Fibres. *d.* 1. 2.

The Plates of this Body were anciently employ'd for the Lights of Windows: and, when Glaſs came afterwards to be more commonly made, and generally to obtain, they cut it into Rhomboidal Panes, in Imitation of theſe Plates. *d.* 18. *Appen.*

SECT. II. *The compoſit* Rhomboid Selenites.

The Conjunction of ſeveral Rhombs happen'd by their being in the Water, ſo near together, whilſt in the Act of Formation, that they interfer'd, intrench'd upon each other: and ſo, of meer neceſſity, combin'd into the ſame Lump. *d.* 20. *& ſeqq.*

C. 2. Of the Irregular *Selenites.*

This is of the ſame Nature and Conſtitution with the Rhomboid Selenites: from which it differs only in Figure.

It is form'd in Fiſſures of Stone, where 'twas confin'd, and had not Scope to cryſtallize and attain a Rhomboidal Figure. *d.* 50.

CLASS IV. PART II.

Selenites Rhomboidalis.

d. 1. The *Selenites Rhomboides* of Dr. *Plot*, (*Nat. Hiſt. Oxfordſhire.*) found in the Place he mentions, *viz.* in *Heddington-Quarry*, in a vaſt Stratum of a dark blue *Clay*, that lies above the Strata of Stone,

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* *Vid. Nat. Hiſt. of the Earth,* Part. IV. *Conſ.* 3.

Stone. This Body in length, meaſuring in a Diagonal, from the two extreme Angles, two Inches and $\frac{6}{10}$: in breadth, meaſuring from the two oppoſite Ridges of the longer Sides of the Rhomb, 'tis $\frac{9}{10}$ of an Inch: in thickneſs, meaſuring from the two parallel Rhomboidal Planes, 'tis $\frac{7}{10}$ of an Inch. Theſe Bodies are ſoft, and eaſily ſplit into Plates, parallel to the Rhomboidal Planes. This is very clear and diaphanous: and its Surface very polite. The Ridge that runs round the Sides of this Body is in all Parts equi-diſtant from the two Rhomboidal Planes: and conſequently the eight Trapezia on its Sides are all of the ſame breadth.

d. 2. Another *Selenites Rhomboidalis.* This is nearly of the ſame ſize with the foregoing, but much thicker, the two oppoſite Rhomboidal Planes being $\frac{9}{10}$ of an Inch diſtant from each other. 'Tis not ſo diaphanous as the former; ſeveral dusky Clouds ſhewing themſelves in the Body of it. Nor is its Surface ſo polite as the Surface of that. 'Twas found in a *Clay-Pit* in a Lane in the Midway betwixt *Wotrup* and *Standford, Northamptonſhire.* There are multitudes of them found in this *Clay.* Mr. *Morton.* The Trapezia in this are not ſo near of the ſame breadth as in the former. This conſiſts of ſeveral Plates laid upon each other, all parallel to the Surface of the Rhomboidal Planes: and the Plates are made up of ſeveral Threads, laid all parallel to the ſhorter ſides of the Rhomboid. They are very conſpicuous all over the two Rhomboidal Planes, and the four ſhorter oppoſite Trapezia, *i. e.* thoſe at the Ends of the Body: but not on the Sides, or the four oppoſite longer Trapezia. So that 'tis evident this Body conſiſts entirely of Threads running acroſs it, and all parallel to each other, and to the ſhorteſt ſides of the Rhomboid.

d. 3. Another of the ſame Shape, but ſcarcely a quarter ſo big as that N° 2. The Threads of this run the quite contrary way to thoſe of the other: being all parallel to the longer ſide of the Rhomboid. From the ſame Clay-Pit.

d. 4. Another, of near the ſame Size with N° 2. but not near ſo thick; the Threads running alſo the ſame way as in that. Only on one of the Rhomboidal Planes, for about the thickneſs of $\frac{1}{4}$ of an Inch: at one of the acuter Angles, the Threads fall ſhort, and do not reach home to the other ſide of the Body, by almoſt $\frac{4}{10}$ of an Inch; by which means there's left a Cavity of a Rhomboidal Shape. From the ſame Clay-Pit.

d. 5. 6. 7. Three other Rhomboidal Selenitæ, having nothing peculiarly obſervable in them; only the Threads terminating abruptly before they arrive at the oppoſite ſide of the Rhomboid, make there a cavernous, abrupt, and irregular Surface. But from all 'tis apparent that theſe are conſtituted, and the Threads of which they conſiſt, are diſpos'd in the manner noted in N° 2. From the ſame Clay-Pit.

d. 8. 9. Two others, in which ſome of the Threads are abrupt, as in the four precedent: and ſome others are wholly wanting at one end of theſe: So that inſtead of the Ridge that parts two of the Trapezia in thoſe, there appears a Furrow in theſe. From the ſame Clay-Pit.

d. 10. Another, having only this obſervable in it, that one of the Trapezia, on the longer ſide of the Rhomboid, is as broad again as the adjacent Trapezium. All the reſt are nearly of the ſame breadth with each other, the Ridge parting them in the middle. From the ſame Clay-Pit.

d. 11. Another, of a more oblong and ſlender ſhape than any of the former. 'Tis one Inch and $\frac{1}{2}$ in length from the two extreme Angles. One of the longer ſides of one of the Rhomboidal Planes is $\frac{9}{10}$ of an Inch in length, and $\frac{3}{10}$ a-croſs. The other oppoſite Rhomboidal Plane is ſomething narrower, being but $\frac{1}{4}$ of an Inch a-croſs. Two of the lateral Trapezia are as broad; but the other two are not much above half that breadth. The Ridges in this riſe but very little: So that the Body approaches pretty near a Parallelipiped. This was found in the great Clay-Pit near the Wells at *Richmond* in *Surry*. Upon the larger Rhomboidal Plane, appear four Lines, at near an equal diſtance from the Margins of the Plane, ſo as to deſcribe a ſomewhat leſſer, but like, Rhomboid upon it.

d. 12. Another, leſs than any of the former. The ſides of the oppoſite Flats are near equal; being each about $\frac{1}{2}$ an Inch: So that theſe Planes are, if not perfect Rhombs, yet approach very near that Figure. The Ridge on the Sides invirons the Body in the middle: So that the Trapezia are all of equal breadth. Found in the Clay of *Heddington-Quarry*, *Confr.* N° 1.

d. 13. Another, little different from the foregoing, only ſomewhat leſs: and found too in the ſame Place.

d. 14. Another, much leſs, being but $\frac{6}{10}$ of an Inch in length, meaſuring from the two extreme Angles. This is of an oblong Rhomboidal Shape, very like that N° 1. The Body is very diaphanous, and the whole Surface very ſmooth. The two opoſite Rhomboidal Planes are of like Figure and Extent: and the Ridge environs the ſides of the Body in the middle; ſo that 'tis a very exact, regular, and beautiful Stone. *Heddington-Quarry. Vid.* N° 1.

d. 15. Another, little different from the foregoing, only ſomewhat leſs. Found in the ſame Quarry.

d. 16. Twelve others, little different in Shape from the foregoing. Found in the Clay-Pit, betwixt *Wotrup* and *Standford*, along with N° 2. Six of theſe are nearly of the Size with that *d.* 14. the reſt are leſs: two or three of them are indeed not above $\frac{1}{4}$ of that bigneſs.

d. 17. Another about the Bigneſs and Figure of that N° 14. Being held to the Light, there appears in the Parts next the four Sides of the Body, four dusky blackiſh Clouds, the intermediate Parts being pellucid, and in form of a Croſs, the Extremities terminating with the four Angles of the Body. Found in the ſame Pit with the precedent.

d. 18. Another, a little bigger, from ſtill the ſame Pit. This has on one of the Flats, four whitiſh Lines, deſcribing a Rhomboid,

boid, all equi-diſtant from the Margins of the Rhomboidal Plane. The Lines ſeem to paſs the Body diametrically quite to the oppoſite Flat or Surface, where a like Rhomb appears.

*d.**18. One half of a very large Rhomboidal Selenites. 'Tis ſomewhat above five Inches long, or betwixt the two extreme Angles. In ſome Parts it is very clear and tranſparent: In others are thin Maculæ, of a grey Colour, and indeed of the ſame Colour with the Clay in which 'twas found. This is not different from the other half, which would eaſily ſplit thorough the whole Body of the Stone, into thin Plates. This Selenites is of that ſort and ſhape which was uſed anciently for Windows, when ſplit in that manner, and framed together with Lead. In imitation of which, when Glaſs came afterwards into uſe, that was commonly cut into the ſame Form. This was dug up in a Tyle Clay-Pit in *Childrens-Field*, in the Pariſh of *Thurnham*, three Miles from *Maidſtone, Kent.* Dr. *Hatley.*

d. 19. A large Rhomboid Selenites, being two Inches and $\frac{3}{4}$ from the two extreme Angles. 'Tis in Figure oblong, and very like that N° 1. In the middle of it appears another, exactly of the ſame Shape with the exterior; and having all its ſides equally diſtant from thoſe of the ambient. This central Rhomboid is one Inch and $\frac{1}{2}$ in length, meaſuring in a diagonal to the two extreme Angles. Mr. *Bland.* Found in a Brick Clay-Pit, at *Kettering, Northamptonſhire.* The Surface of the interior Rhomboid is diſtinguiſhed by blue Clay that happened to apply there in the Progreſs of the Formation of the Body: and this, with what has been noted in the ſeveral precedent Bodies, ſhews plainly that the firſt Stamina are laid, and the whole Progreſs of the Formation, to the laſt made, in the ſame Rhomboidal Form.

d. 20. Another of near the ſame Shape, but leſs, being only two Inches in a diagonal from the two extreme Angles. Into the middle of one of the Trapeziums is infix'd a leſſer Rhomboid is Selenites, paſſing into the Body of the larger. Near as much of it is immers'd or included in the Maſs of the larger as is extant: and that End that is within, the larger being very pellucid, appears to be of the ſame Rhomboidal Figure with that without. *Heddington-Quarry*, in the Stratum of Clay. *Vid.* N° 1. The leſſer of theſe Bodies muſt have been form'd before the larger: and with the ſpace in which this was form'd; ſo that 'twas in the way of its Concretion: and there was not ſcope for it to complete its full Form. This affords us an Argument of the quiet State of the Fluid in which theſe Bodies were form'd.

d. 21. Another of the ſame Shape and Size, having three leſſer infix'd into it. From the ſame Clay-Pit with N° 2.

d. 22. Another, with a leſſer in like manner infix'd into it. This is ſplit in a Section parallel to the Planes of the Rhomb. The exterior, in dividing, parts at the Surface of the infix'd leſſer Rhomb. Whence 'tis evident that they are not continuous: and that the leſſer included Body was formed before the larger. *Heddington-Quarry. Vide* N° 1.

d. 23. Another, of near the ſame Shape and Size with that N° 19. It has one pretty big, and three or four leſſer Rhomboids, infix'd into the Trapeziums on each Side about the Middle of it. Found in the great Clay-Pit near *Richmond-Wells.*

d. 24. Another as large, from the ſame Pit. Each of the Trapeziums are as broad as the rhomboidal Planes: So that it is not ſo flat as the precedent generally are, its greateſt Diameter being from one of the ſaid Planes to the oppoſite; whereas the greateſt Diameters of thoſe are from the two oppoſite Ridges parting the lateral Trapeziums. There are ten or eleven leſſer ones infix'd into the Middle of it.

d. 25. Another, not near ſo big, but of much the ſame compreſs'd Shape: and having ſeven or eight leſſer ones infix'd into the Middle of it. From the ſame Pit at *Richmond.*

d. 26. Another, from the ſame Pit: and of the ſame Shape and Bigneſs with N° 25. having two leſſer infix'd into it.

d. 27, 28. Two others, bigger, from the ſame Pit. They have a great many leſſer ones infix'd in Cluſters all round the Middle of them.

d. 29. Another *Rhomboidal Selenites* of a compreſs'd Form, having many others of like compreſs'd Form infix'd round the Middle of it. From the ſame Clay-Pit, near *Richmond-Wells.*

d. 30. Another, not ſo big, having a vaſt many little ones infixed all round the Middle of it. From ſtill the ſame Clay-Pit.

d. 31. A large flat Body, being 4 Inches in length, 3 in breadth, and 1 $\frac{3}{10}$ in thickneſs. It is made up of 6 *Rhomboidal Selenitæ.* In the middle are two pretty long Rhomboids, ſeeming to croſs each other at equally oblique Angles. In the two oppoſite Sinus's of the Croſs, are two Rhomboids of the ſame Thickneſs with the croſs ones, but ſhorter, adhering to each other, and to the croſs ones in the ſame Plane. All of them are much chop'd and ſulcated by their having lain for ſome time expos'd on the top of the Clay to the Weather, and perhaps to the Eroſion of the vitriolick Matter that is pretty plentifully mix'd amongſt the Clay, in which this was originally lodg'd. There adheres to it, in a Sinus, a Nodule of the Vitriolick Pyrites of about the bigneſs of a large Pea. Clay-Pit, near *Richmond-Wells.* The Chops and Clefts ſhew the Manner of the Grain, and Conſtitution of theſe Bodies.

d. 32. Two other *Rhomboidal Selenitæ*, placed croſs-wiſe like the former. In the two oppoſite Sinus's, are two Bodies of like Thickneſs and Subſtance with the *Rhomboids*, adhering to them ſo as together to make up an oblong flat Body. Found at *Great Bowden* in *Leiceſterſhire.* Mr. *Bland.*

d. 33. An oblong flat *Selenites*, 4 Inches and $\frac{1}{2}$ in length, 1 in breadth, and $\frac{1}{2}$ an Inch in thickneſs. The two oppoſite Sides riſe into Ridges, like thoſe of the *Rhomboidal Selenites.* And on one

Side, towards the End, a Part ſtands forth about $\frac{2}{10}$ of an Inch, for about 1 Inch and $\frac{1}{2}$ in length, terminating with an acute Angle, and appearing exactly like a Side of a *Rhomboidal Selenites*, jetting forth further than the reſt of the Body. Indeed the Body ſeems to be compoſed of two Rows of oblong *Rhomboidal Selenitæ*, each joining to other at the Ends, and each Row being joined to the other at their Sides. For the Threads, that conſtitute it, run all obliquely in a Parallel, as thoſe of the *Rhomboids* do; and meeting in the middle of the Body in obtuſe Angles, juſt as ſeveral *Rhomboidal Selenitæ*, placed in the manner intimated above, would do. Through the Middle of it, for near the whole Length, runs a blackiſh, dusky, plumous Body, much like that delineated by Dr. *Plot*, *Oxfordſh. Tab.* 2. *Fig.* 1. *d.* ſending forth, on each ſide, ſmall Fibres obliquely, and indeed parallel to the Threads of the Body; being probably no other than ſome fine Parts of the blue Clay, either incorporated with it at its Formation, or inſinuated ſince into it, the Body being of a Conſtitution ſo lax, that Ink will ſink and inſinuate into it, as the ſaid Clay diſſolved in Water might. 'Twas found in a Bed of a dusky blue Clay, in digging the Canal near the Earl of *Montague*'s Houſe at *Boughton*, in *Northamptonſhire*. Mr. *Morton*.

d. 34. Another, little different from the preceding; only, as that has one, this has two Jets, over-againſt one another, on each ſide of the Body, forming acute Angles with it, and appearing as two *Rhomboidal Selenitæ* apply'd together in the manner intimated above. This has alſo a like plumous Body in the Middle, but finer, and ſomewhat leſs conſpicuous than that of the former. Found in the Clay, over the Stone, in *Heddington-Quarry*. *Vide* N° 1.

d. 35, 36. Another, ſomewhat broader, and ſplit in two, to ſhew the interior Texture of it. One End of it terminates in an Angle exactly like that of the *Rhomboidal Selenites*. The Threads of it are placed obliquely and parallel: thoſe of one Side meeting at a Line in the Middle of the Body at obtuſe Angles, as in N° 33. *Heddington-Quarry*, near *Oxford*. It parts into Plates, as the *Rhomboid Selenitæ* do: and is ridged on the Sides, as they are.

d. 37, 38, 39. Three others, broken, ſo as more plainly to exhibit the interior Texture and Compoſition of this ſort of *Selenites*, which is ſuggeſted in N° 33. and the two following.

d. 40. Another oblong *Selenites*, much leſs than any of the foregoing. 'Tis flat, 1 Inch and $\frac{1}{2}$ long, and $\frac{3}{10}$ of an Inch broad. 'Tis ridged on each ſide, as the precedent are. *Heddington-Quarry*.

d. 41. Another, of much the ſame Shape and Size with N° 40. From the Clay-Pit in which N° 2. was found.

d. 42. Another, from the ſame Pit, and of the ſame Shape, but a little leſs.

d. 43. Four like ſmall oblong *Selenitæ*, all fix'd into the End of one ſomewhat larger. *Heddington-Quarry*.

*d.*44. A flattiſh Body, ſomewhat concave, being compoſed of many *Selenitæ*, all ſmall, but of different Sizes. As to their Shapes, they are all angular, and tending towards *Rhomboids.* They are placed in no Method or Order: being cemented promiſcuouſly together, by a very ſmall Quantity of a light-brown earthy Matter. This was part of a Ball, about the Bigneſs of a Man's Head. 'Twas hollow within, and lined with this Cruſt of *Selenites.* Without 'twas cover'd with a thin Cruſt of a pretty hard Subſtance, and a dusky grey Colour. 'Twas lodged in a Stratum of Clay of the ſame Colour, at the depth of about 16 Foot, and about 2 Foot above a Stratum of Stone. 'Twas found in ſinking a Well at *Bowden*, in *Leiceſterſhire*. Mr. *Bland.* There was nothing in the hollow of it, except a ſmall Quantity of a looſe Duſt or Powder. They found only this Ball and another, which was of an oblong Form, and not ſo big as this was. N° 45. is a Piece of it.

*d.**44. A like flat Body, thicker than the precedent, compoſed of *Rhomboidal Selenitæ*, of ſeveral Sizes, very clear and fine. This was found in ſinking the Purging-Well at *New-Croſs*, near *Deptford.*

*d.*45. Another flat Piece of like ſort; on the Outſide of it is a grey Cruſt of a pretty hard Subſtance, about $\frac{1}{12}$ of an Inch in thickneſs. Upon this are irregularly ſet many ſmall *Selenitæ*; all of them, or for the moſt part, ſtanding endwiſe. They are generally of the ſame Size, and of a compreſs'd rhomboid Shape, not unlike thoſe of N° 29. *ſupra*, but much leſs. *Confer.* N° 44. *ſupra.*

*d.**45. Several like *Selenitæ*, ſeparated: not ſo tranſparent as thoſe of the precedent. Found, many Years ago, at the firſt ſinking of the Purging-Well at *Acton.*

*d.*46. A pretty large Piece of a *Selenites*, ſeeming, by the Caſt and Grain of it, to have a Sparry Matter mix'd with it. There are incorporated with it ſeveral Grains of a very bright yellow glittering *Marcaſite*; the largeſt of them ſcarcely ſo big as a ſmall Pea. Found in ſinking a Well near *Nottingham.*

*d.*47. A flat Body, half a Foot in length, and 3 Inches broad, compoſed of ſeveral pretty large *Rhomboidal Selenitæ*, placed in one Plane in a double Row, except ſome few at one End of it, whoſe Poſition is irregular, one or two of them being prominent, and ſeeming to be infix'd tranſverſely into the Body. Found in the great Clay-Pit near *Richmond-Wells.*

*d.*48. Another, from the ſame Place, much like the former, only ſomewhat leſs: and there are ſeveral *Rhomboidal Selenitæ* infix'd round the Middle of it; where it, being broken, diſcovers they all tend to the ſame Point in the Axis of the Body.

*d.*49. A Maſs, conſiſting of ſeveral ſmall *Rhomboidal Selenitæ*, placed irregularly and confuſedly one by another. Found in digging the Well of Purging-Waters at *New-Croſs*, near *Deptford*, *Kent.*

Kent. The *Selenites* being diſcover'd near this Well, the Purging-Springs by *Shooter's-Hill*, and thoſe of *Streatham*, *Dulwich*, *Epſom*, *Richmond*, *Kenſington*, and *Acton*, has induced ſome unskilful Perſons to believe, that theſe impart the Purging Power to thoſe Waters. But the *Selenites* is found in thoſe parts, as commonly where there are no ſuch Waters: and indeed in equal plenty where-ever there is digging for common Wells, Brick or Tile-Clay, or other Occaſions. This Body, by Calcination or otherwiſe, being to be reduced to a very fine and impalpable Powder, is fitted for being taken either inwardly or outwardly. But all our Tryals inform us, that its Properties are the ſame with common *Talc*, it being a pretty ſtrong Exſiccant and Abſorbent: and is very powerfully binding, inſtead of purging. More accurate Enquiries and Obſervations have taught us, that the purging Qualities of thoſe Waters are owing to the vitriolic and other Salts; lying, along with numerous *Pyritæ*, in the Strata through which thoſe Waters drain and paſs.

d. 50. A flat Body, near half an Inch thick, compoſed of ſmall thin Plates, placed all edgeways, but irregularly, and terminating in the ſame Plane on the two oppoſite Surfaces. Found about 150 Foot deep, in a Fiſſure of Paving-Stone in the Iſle of *Portland*. They are found both in the horizontal and perpendicular Fiſſures of the Stone. This appears to have fill'd the Fiſſure, and been contiguous to the Surface of the Stone in both ſides. It ſeems to be of the ſame Conſtitution and Matter with the *Selenites*.

d. 51. Another flat Piece of the ſame ſort, but thinner; ſeveral of the ſmall Plates in this are placed not directly edgeways, but more obliquely than in the former. From the ſame Quarry.

d. 52. A Maſs, made up of many very ſmall *Selenitæ*, cemented together by a brown earthy Matter. They are angular; but of what particular Figure, is not eaſy to determine, becauſe of their being impacted ſo thick and confuſedly together. Out of a Lead-Mine, at *Workeſworth* in the *Peak*. It lay near the Surface: and ſeems to have been left by the Water of the Deluge departing; by means of which it appears to have been tumbled thither from afar, worn, and ſmooth'd.

d. 53. A Piece of *Flaky*, *Fiſſil*, *Selenites*, in ſome Parts of a white, in others of a yellow brown Colour. Digged up near *Epſom-Wells*, *Surrey*.

d. 54. A *Rhomboidal Selenites*, with Clouds and Specks of blue Clay in the Body of it. From - - - - - - in the *Peak*.

d. 55. A *Selenites*, 2 Inches and an half in Length, and ¾ of an Inch in Diameter; having ſix Sides near equal, and terminating at each End in a trigonal Point. There are ſeveral leſſer ones infix'd into it about the Middle of the Column: in much the ſame manner as in *d.* 24. 27. *& ſeqq.* This was found on the Top of the *Moulds*, an high Hill in *Arkendale*, *Yorkſhire*.

CLASS IV. PART III.

Talky BODIES *that are Fiſſil and eaſily diſpoſed to ſplit; being compoſed of Fibres, generally ſtreight, and lying parallel to each other.*

EXTRACT.

Gypſum, + *d.* 11.
Engliſh Talc, +*d.* 1. *& ſeqq.*
Aſbeſtos or *Amianthus* + *d.* 8, 9, 10, *&c.*
—— Conſiſts of tranſverſe Fibres of a *Talky Spar*, in Veins like the Scepta of the *Ludus Helmontii.*
Linum Aſbeſtinum. + *d.* 10 *.

Of the Origin and Formation of the Aſbeſtos & Linum Aſbeſtinum. + *d.* * 10.
Aſbeſtos *with* Marcaſit *affix'd.* +*d.* 9.
Aſbeſtos *in the Fiſſures of Marble.* +. *d.* 10.
——— *in the Load-Stone.* +*d.* 15.
Engliſh Talc, *found in the Perpendicular Fiſſures of Stone,* + *d.* 1. 2.
A Talky Body reſembling Wood petrified, having in it ſeveral Veins, which ſeem to have been Cracks fill'd with Spar. Vid. +*d.* 40. *When broken, it emits a Sulphurous Smell. Found in a vaſt Stratum of Stone.* +*d.* 5. 6.
A Talky Body found lodg'd in a Stratum of Gravel. +*d.* *7.
Gypſum & Selenites, *in a Maſs of Earthy Matter.* +*d.* 13.
Engliſh Talc *employed for the making Wieks for Lamps: and will burn very long without any ſenſible Conſumption.* + *d.* 1.
Of the Mechanical Uſes of Gypſum.

Talky Fibrous Bodies.

+*d.* 1. A Piece of a flat Body, very white, and ſhining, with ſome degree of Diaphaneity. 'Tis ſomewhat above two Inches thick: and is made up of ſeveral very fine Threads, laid exactly parallel to each other, and very cloſely united together. The two oppoſite flat Surfaces are ſomewhat rough: having a ſmall Quantity of a reddiſh gritty Matter adhering to each. The Body ſeems to have been lodged in one of the Perpendicular Fiſſures of a Stratum of Stone to have fill'd it: and the Threads to have run horizontally a-croſs from ſide to ſide. This is commonly ſold in our Druggiſts Shops, by the Name of *Engliſh Talc. Litle-Leak, Leiceſterſhire.* This Specimen is only part of one that was much larger, flat, and having all the Threads laid a-croſs; ſo that their Ends terminate in the two oppoſite flat Surfaces. 'Twas of the ſame thickneſs in all Parts of it. It ſplits, in a Section parallel to the Threads, very eaſily. A ſmall Piece of it, a little bruiſed, ſo that the Threads part and open a little, ſerves very well for a Wiek to a Lamp, and gives a good Light. Suck a Wiek will laſt a great while. I kept one burning twelve Hours; when, extinguiſhing the Flame, I found the Wiek had ſuffer'd no ſenſible Conſumption: nor was it any ways alter'd, only the Colour was changed to a pale brown. Mr. *Hunt* ſays, great Quantities of this Body are found in Beds of Marl, about *Highley*, betwixt *Warrington* and *Knapton*, in *Cheſhire*, in flat Lumps, lying horizontally. Thoſe are uſually ſomewhat thinner than this.

†*d*. 2. Another like flat Body, but ſomewhat more pellucid. 'Tis near an Inch and ½ in Thickneſs: and the Threads groſſer than thoſe of the former. They run in like manner a-croſs from the one flat Surface to the other; but are intercepted by four Plates or Partitions, placed at near an equal Diſtance, and all parallel to the Surfaces of the Body. To one of the Surfaces adheres a pale-brown Stoney Matter: and that of the Partitions is of the ſame Sort and Colour. This alſo ſeems to have been contained in a perpendicular Fiſſure; near *Newbury*, in *Berkſhire*. Major *Heron*.

†*d*. 3. Another, compoſed of like parallel Semi-pellucid Threads with a Caſt of Green. Found very plentifully - - - - - - - in *Bedfordſhire*. Dr. *Allen*.

†*d*. 4. Another, conſiſting of like ſtreight and parallel Threads, coarſer than thoſe of N° 1. opake, and of an Aſh-Colour. Found plentifully on *Knipe's-Scarr*, near *Lowther* in *Weſtmorland*.

†*d*. 5. Another, opake likewiſe, and of much the ſame Colour with the foregoing. This is very large, being about ſeven Inches from flat to flat. 'Tis round, about five Inches ½ in Diameter, and ſomewhat reſembles a Piece of the Trunk of a Tree. The Workmen in theſe Quarries find this ſort pretty frequently: and take it for petrify'd Wood. But that is an Error, as may be evinced from the diſpoſition of the Threads of it. For, tho' they lie, in moſt parts of it parallel, yet there are ſome that do not: but decline, into an oblique poſition, ſo as to make acute Angles with the adjacent Filaments. This is of a Stoney Subſtance, a fine cloſe Grain, pretty hard, and when broken emits a ſulphurous Smell. There run thorough the Body of it ſeveral Veins of a Semi-pellucid Spar, that ſeem to have been originally Cracks * in the Body till fill'd up with that ſparry Matter. Found lodged in a vaſt Stratum of Stone in the Quarry in *Portland*, at a conſiderable Depth.

†*d*. 6. Another, little different, only leſs, from the ſame Quarry. The Colour, Solidity, Texture, Sparry Veins, like thoſe of the

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* *Conf.* x *d*. 40. ‡ *d*. 10.

foregoing; tho' it has ſomewhat a nearer likeneſs to Wood, and, in one Part of it, is a reſemblance of ſuch a Knot, as is uſual in Timber.

† *d.* 7. A Piece of another, from the ſame Quarry. This has ſome degree of Diaphaneity. The Fibres of it are near ſtreight, and parallel.

† *d.* *7. A flat Piece of another, half an Inch thick. From a Gravel-Pit, near *Aſhley, Northamptonſhire.* Mr. *Sawyer.*

† *d.* 8. A Piece of a flat Body, ſomething above $\frac{1}{2}$ an Inch thick. There run a-croſs it many flexil parallel Threads, of a white Colour, with an Eye of Green. 'Tis a ſort of Asbeſtus or Amianthus. From the Iſland of *Angleſey.* Mr. *Lhuyd.* Vid. *Philoſ. Tranſ.* N° 166. *p.* 823.

† *d.* 9. Another like Body, from the ſame Place. The Fibres or Threads of this have a ſomewhat ſtronger Caſt of Green: and are intercepted in their Paſſage croſs the Body, by three thin Plates ſet at near equal diſtance, and parallel to the Flats or two oppoſite Surfaces of the Body. On one of thoſe Surfaces is affix'd a ſmall Piece of a Marcaſite.

† *d.* 10. A thin Vein of *Asbeſtos*; in Marble, as it ſeems, of a blackiſh Colour with a Caſt of Green. In ſome Parts of it is a Body very like Spar, of a greeniſh Colour, with an Eye of Yellow. From ſtill the ſame Place.

† *d.* *10. Three Pieces of *Asbeſtos*, with a Quantity of the Threads or Linum Asbeſtinum. Alſo from *Angleſey.*

† *d.* 10*. *Marble*, of a blackiſh grey Colour; with Spots, ſparry, whitiſh with a Caſt of green. 'Twas part of a very large Maſs, of like Colour and Conſtitution; and broke off from a Stratum. The Maſs was thick ſet with Veins of Spar, having a Talky Gloſs, white with a Caſt of green in ſome parts, in others with a Caſt of yellow. The largeſt Veins were in Diameter about $\frac{3}{4}$ of an Inch: the reſt, thinner, of various Diameters; ſome ſo ſmall, as to be juſt diſcernable. Thoſe Veins are in Conſtitution exactly like the *Septa* of the *Ludus Helmontij*; and conſiſt of various thin Plates, as thoſe do. They are likewiſe ſtriated a-croſs; and compoſed of tranſverſe Fibres or Filaments. Some of theſe Fibres are inconceivably fine and flexible; and are what is commonly call'd *Linum Asbeſtinum.* Some few parts of the Veins conſiſt of Spar that is not ſtriated a-croſs. Thoſe Veins appear manifeſtly to have been originally no other than Cracks, that were fill'd ſucceſſively by Spar, drain'd, by Water, out of the Bodies of the Strata; which abound with Spar of like Complection. From *Angleſey.*

† *d.* 10 ⊖. Another Piece off the ſame Body, ſhewing the Veins and Plates very diſtinctly.

† *d* 10 ⧺. Another Piece off ſtill the ſame Body, with part of a Vein not ſtriated a-croſs. The Spar, as uſual, is whitiſh, with a Caſt of green.

† *d.* 11. A flat Body much like † *d.* 1. only the Threads are not ſo fine. This is a ſort of Gypſum. From - - - - - *Derbyſhire.*

† *d.* XII.

+ *d.* 11 *. Another. This is extremely white, gloſſy, and ſhining. Found in the Alabaſter Pit, at *Chellaſton, Derbyſhire.*

+ *d.* 12. A Maſs in which the Gypſum is mixed confuſedly with a reddiſh earthy Matter. In ſome parts of it are Veins of the Gypſum more pure, and compoſed of Threads like the foregoing. From the ſame place, with + *d.* 11.

+ *d.* 13. Another, conſiſting chiefly of the red earthy Matter, but with ſome ſmall Veins of the white thready Gypſum running thorough it, with ſome *Selenitæ* lodged in it. From ſtill the ſame place.

+ *d.* 14. A pretty large Piece of a Body of a very dark grey Colour, conſiſting of parallel Fibres running pretty ſtreight the whole length of it. It was ſent me by the Name of petrified Wood; and indeed it much reſembles the Grain of Wood. 'Twas found on the Shores near *Lulworth*, nine Miles Eaſt of *Weymouth*.

+ *d.* 15. A Mineral of a grey Colour with an Eye of green, only on one ſide it is of a pale brown. 'Tis compoſed of ſeveral Sheafs of grey Filaments, thoſe of each Sheaf being generally parallel to each other, but the ſeveral Sheafs are variouſly laid, ſo that ſome of them lie croſs one another. The Filaments appear like thoſe of the *Lapis Asbeſtos*. 'Twas broke off from a piece of Loadſtone of a dark ferruginous Colour, ſome Fragments of which ſtill adhere unto it. From ----- *Devonſhire.* Mr. *Stoneſtreet.*

+ *d.* 16. A Body, white, gloſſy, and made up of Threads running croſs-wiſe of it. 'Tis little different from that + *d.* 11. only that is flat, and ſmooth, on the two oppoſite Surfaces, as if it had fill'd a Fiſſure in Stone, and been contiguous to both ſides of it. Whereas this is unequal, and jetting out into Cryſtallizations on one ſide; tho' plain, and ſeeming to have been contiguous, and adhered to the Stone on the other. *Artleburrow-Quarry, Northampton.* Mr. *Morton.*

CLASS IV. PART IV.

The Waxen-Vein, *or* Ludus Helmontij. *Vide* Preface *infra.*

EXTRACT.

INTRODUCTION. Of the various Names given to this Body by Authors. *Vide* Preface *infra.*

An Hiſtorical Account of the ſeveral particular Bodies in this Claſs; as alſo Obſervations upon each: with various Deductions from them. *Vide* Preface *infra.*

Theſe recollected, and digeſted into a Method; in order to the ſetting forth the Natural Hiſtory of this Body.

C. i. The Places where this Body occurs. On the Sea Shores. x *d.* 1. *& ſeq.* x *d.* 9. 11. 17. 18. 19.

In the Cliffs. x *d.* 1.

In Plains, at diſtance from Sea. x *d.* 28. *& ſeq.*

On high Hills. x *d.* 25. 30. 35. 40.

C. ii. The ſeveral Parts of *England* where 'tis found. In the Iſle of *Grains.* x *d.* 19. In the Iſle of *Sheppy.* x *d.* 1. *&c.* In the Iſle of *Thanet.* x *d.* 17, 18. *Sherburn, Glouceſterſhire.* x *d.* 7. Shores of *Yorkſhire.* x *d.* 9. *Oxendon, Northamptonſhire.* x *d.* 10. *Hamſtead-Heath.* x *d.* 10. *Harrow on the Hill.* x *d.* 10. *Richmond, Surry.* x *d.* 12. *& ſeq.* 30. *& ſeq.* *Maſham, Yorkſhire.* x *d.* 20. *Crick, Northamptonſhire.* x *d.* 22. 23. *Cole-Aſhley, Northamptonſhire,* x *d.* 24. *Shooter's-Hill, Kent.* x *d.* 25. *Peckham, Surrey.* x *d.* 28. *Norwood* in *Surrey.* x *d.* 29. Near *Lamb's-Conduit.* x *d.* 34. *Epping-Foreſt.* x *d.* 37. *Mary-le-bon* in *Midleſex.* x *d.* 38. *Kilburn, Middleſex.* x *d.* 39. *Holloway,* near *Highgate.* x *d.* 38. *Highgate.* x *d.* 35. 40. 43. *& ſeq.* North of *Grays-Inn.* x *d.* 41. *Pancras.* x *d.* 42. In the Fields all along the North Side of *London.* x *d.* 52. *Low-Eaſtoft* in *Suffolk.* x *d.* 53. In *London.* x *d.* 55.

C. iii. In what ſort of terreſtrial Matter 'tis lodg'd. In the Strata of Earth, that conſtitute the Cliffs by the Sea, x *d.* *& ſeq.* In Strata of Clay, x *d.* 26. *& ſeq.*

C. iv. At what Depths in the Earth it has been obſerv'd, x *d.* 43.

C. v. Of the Number and Frequency of the *Ludus Helmontij,* x *d.* 30.

C. vi. Its Poſture in the Earth, flat-ways, and parallel to the Site of the Stratum in which 'twas repoſited, x *d.* 1. & 43.

C. vii. Of the various Magnitudes of the *Ludus Helmontij,* x *d.* 25. 28. 30. 43. 51. 52.

C. viii. Of the exterior Form of this Body.

§. 1. Tis a Nodule, and found ever looſe and independent, x *d.* 25. *& alibi paſſim.*

§. 2. Of a broad, flat, or compreſſed Shape, and commonly approaching round. x *d.* 1. 28. 38. 43. 52. 53.

§. 3. Generally ſomewhat leſſening, or growing thinner towards the Margin, all round. x *d.* 52. *& ſeq.*

Appendix. 1. Tis ſometimes found naked and uncover'd, *vide* x *d.* 1.

2. But is moſt commonly ſurrounded and inveſted with a ſtoney Cruſt. x *d.* 25. 26. 28. 30. 41. *& ſeq.* 51. 52.

3. Some Inſtances there are of this Body compoſed of various Cruſts, including one another, like thoſe of the *Bezoar Minerale.* x *d.* 42. *vide* †o. 20.

C. ix. Of the interior Frame and Compoſition of the *Ludus Helmontij.*

§. 1. It conſiſts chiefly of a lapideous Matter. x *d.* 1. *& ſeq.* *Conf. c.* 11. *infra.*

§. 2. That Matter is intercepted and divided into Tali. x *d.* 1. *& ſeq.*

§. 3. This is done ſometimes by Cracks and Fiſſures variouſly paſſing the Body. x *d.* 34. 38. 51.

§. 4. But generally by means of certain talky Septa or Partitions. x *d.* 1. *& ſeq.*

C. x. Of the Figure of the Tali.

They are in ſhape of a Column, with 3, or 4, but moſt commonly 5 Sides. x *d.* 1. 3. 17.

C. xi. Of the Magnitude of the Tali. x *d.* 1. 17.

C. xii. Of the Texture and Conſtitution of the Tali, or the main and common conſtituent Matter of this Body. *Conf. C.* ix. § 1. *ſupra.*

§ 1. The Tali are compoſed ſometimes of a ferruginous or ochreous Matter, x *d.* 17. 18. 19. 28.

§ 2. But moſt commonly of a cloſe ſtoney Matter, of a grey Colour. x *d.* 7. 22. 41. 52. 53.

—— of a foliomort Colour. x *d.* 1, *&c.*
—— of a Ruſt Colour. x *d.* 42.
—— of an Iron Colour. x *d.* 35.
—— of a light Brown. x *d.* 1. 6. 12. 17. 20. 28.
—— of a dark Brown. x *d.* 5. 10. 13. 25. 52.
—— dark Brown, with a Bluſh of Purple. x *d.* 29.
—— Brown outwardly, and grey within. x *d.* 30.
—— variegated with Brown and Grey. x *d.* 11. 13. 51.

Append. 1. Several Particulars in the Conſtitution of Tali diſcover'd by the Aſſiſtance of Microſcopes. *Vide* Preface *infra.*

2. Of the ſpecific Gravity of the Tali, of the ſeveral ſorts of this Body. *V. ibid.*

3. Chymical Experiments and Tryals with ſeveral Menſtrua, in order to diſcover the Nature of all the different Kinds of this Body. *V. ibid.*

4. Tryals of the ſeveral ſorts of this Body by Fire. *V. ibid.*

5. Of the medicinal Powers and Properties of this Body. *V. ibid.*

C. xiii. Of other extraneous Bodies, or Matter, intermixt or incorporated with the common conſtituent Matter of the Tali.

§ 1. *Yellow Ochre.* x *d.* 28.
§ 2. *Cryſtall.* x *d.* 4.
§ 3. *Talc.* x *d.* 5.
§ 4. *Salts.* x *d.* 25. 30.
§ 5. *Marcaſit.* x *d.* 11. *& ſeq.*
§ 6. *Iron.* x *d.* 25. 29. 0. 105.
§ 7. *Piped-Waxen Vein.* x *d.* 11.
§ 8. Various Sea-Shells. x *d.* 10. 25. 27. 30. 40.

C. xiv. Of the exterior Cruſt with which this Body is frequently found inveſted. x *d.* 52. *Conf.* C. viii. *Append.* 2.

C. xv. Of the Septa, or Partitions, that parcel out this Body into various Maſſes or Tali. x *d.* 1. *& ſeq.*

§ 1. They are compoſed ſometimes of an ochreous Matter. x. *d.* 17. 18.

§ 2. But moſt commonly of a talky Spar. x. *d.* 10. 16. 20. 23. 40. 53.

§ 3. The various Thickneſs of the Septa. x *d.* 1.

§ 4. In thoſe Bodies that are inveſted with a Cruſt, the Septa leſſen and grow thinner as they approach the Cruſt, terminate there, and rarely paſs thorough it. x *d.* 5. 28. 32. 37. *& ſeq.* 51. 52.

§ 5. The Septa are compos'd of thin Plates ſtanding edgeways, and generally parallel, and conſiſting of tranſverſe Fibres, ſo that the whole appears to be ſtriated croſs-ways. x *d.* 1. 22. 25. 28. 30. 35. 36. 43. 45. 46. 51.

§ 6. The Plates, tho' generally contiguous, are ſometimes divaricated, and ſtand at ſome Diſtance from one another, ſo as to leave room in the Intervals for Spar to ſhoot, which it does into ſmall Cryſtals. x. *d.* 13. 24. 36. 37. 55.

Append. 1. Thoſe Cryſtals are ſometimes finely colour'd. x *d.* 33. 34. 36.

2. Stellar Efflor eſcencys form'd alſo in the ſaid Intervals. x *d.* 16. Of the ſtarred *Waxen-Vein. ibid.*

3. Efflor eſcencys and Cryſtallizations of *Marcaſit*, upon the ſparry Plates, form'd in thoſe Intervals. x *d.* 12. *& ſeq.*

4. A Plate of *Marcaſit*, interpos'd betwixt the ſparry Plates, in one of thoſe Intervals. x *d.* 11.

C. xvi. Inſtances of ſome few ſparry Partitions that intercept and paſs thorough others. x *d.* 47.

C. xvii. The Cracks and Partitions divide and paſs the Sea-Shells, lodg'd in it, as well as the Stone itſelf. x *d.* 25. 28. 40.

C. xviii. *Dendritæ*, or fuliginous mineral Delineations of Shrubs, in the *Ludus Helmontij.* x *d.* 28. 40.

C. xix. Of the Origin and Formation of the *Ludus Helmontij.*

ARTIC. I. *Reflections.*

§ 1. Upon the Bigneſs of this Body. *Conf.* C. vii. *ſupra.*

§ 2. Upon its being in Form of a Nodule, looſe and independent. *Conf.* C. viii. *ſupra.*

§ 3. Upon its lying flat-ways, and parallel to the Site of the Strata, in the very Manner that all Bodies of like Form ſettling down from a Fluid are wont to lie. x *d.* 43. *Conf.* C. vi. *ſupra.*

§ 4. Upon the various Shells and marine Bodies included in it, and incorporated with the Maſs of it. *Conf.* C. xiii. §. 8. *ſupra.*

§ 5. Upon the Cracks in this Body. *Conf.* C. ix. § 3. *ſupra.*

§ 6. Upon the Conſtitution of the Partitions. *Conf.* C. ix. § 4. *&* C. xv. § 1. *& ſeq.*

§ 7. Upon their growing gradually leſs, as they approach the Cruſt. x *d.* 40. *Conf.* C. xv. §. 3.

§ 8. Upon their Cryſtallizations, & Efflorefcencys. *Conf.* C. xv. § 5. *Append.* 1. 2. *ſupra.*

§ 9. Upon the Partitions paſſing the Bodies of the Sea-Shells dividing and parting of them. x *d.* 40. *Conf.* C. xvii. *ſupra.*

§ 10. Upon thoſe Partitions that divide and intercept others. x *d.* 47. *& ſeq.*

ARTIC. II. *Deductions.* *Conf. Natural Hiſt. of the Earth.* Part IV. *Conſ.* 2. 3.

1. The main and common Maſs of this Body concreted, and was form'd in Water. x *d.* 43.
2. In which it was ſuſtain'd, along with Sea-Shells, and other like Bodies. x *d.* 43.
3. This was at the Time of the univerſal Deluge. x *d.* 43.
4. Upon the Retreat of the Water, it ſettled down along with the Clay, Earth, and other like Matter that form'd the Strata in which it was lodg'd. x *d.* 43.
5. It was, at its firſt Settlement, uniform and ſolid. x *d.* 40.
6. The Cracks in it were form'd afterwards. x *d.* 40. 47. *Conf.* † *d.* 5.
7. The Cracks and Breaches of the ſame Body, were made chiefly at the ſame time. x *d.* 47.
8. But ſome few Inſtances there are of Cracks made after that Time. x *d.* 47.
9. As the Water in which the *Ludus Helmontij* was form'd at the Deluge, *Conf.* C. xix. *Art.* II. 1. 2. 3. *ſupra.* wherewith the Pores and Interſtices of the Body were ſaturated, during the Coalition of the Matter that compos'd it, gradually quitted it, and got forth, the ſaid Matter was contracted, and ſhrunk up in divers Directions, and with a Tendency towards divers Axes in the Body; by which means the Cracks were affected, and the Maſs parted into Segments or Tali. x *d.* 25. 40.
10. The Cracks both of the Stone and Shells, were, generally, in tract of Time, gradually filled by Spar; the Water which is continually pervading the Strata deriving thence looſe Particles of that Mineral, introducing them into the Cracks, and affixing of them there, ſo as thereby to form the Plates and Partitions. x *d.* 40. 45.
11. The ſparry Partitions that are continued thorough, and intercept other ſparry Partitions, are of a ſecond Order, and were form'd ſince thoſe others were. x *d.* 47.

The

The Waxen Vein: *or* Ludus Helmontij.

PREFACE.

Of the various Names given to this Body by Authors.

THE *Body I am here about to exhibit is commonly called in* England *the* Waxen-Vein. *That Name, like many others, is not ſo appoſite that one may imagine that they who gave it, made uſe of much Thought or Reflection. The Spar of ſome of the* Veins, *or* Septa, *particularly in thoſe of* Sheppy *Iſland, is of a yellowiſh Colour, and ſomewhat reſembles melted Wax; which perhaps was the only Reaſon they had to give it that Name. Indeed Dr.* Grew (*Muſ. Reg. Soc. p.* 311) *ſeems to imply as much. He ſuppoſes the* Waxen-Vein *to be the ſame with the* Ludus *of* Paracelſus *and* Van Helmont. *Dr.* Plot (*Nat. Hiſt.* Staffordſhire, *c.* 5. §. 23.) *is of another Opinion: and takes that* Ludus *to be a teſſellated Pyrites. Of which ſort he notes, out of* Wormius, *there are, at* Oſterdale, *in* Norway. Wormius *reckons this among the* Copper-Ores: (*Muſæum. p.* 121.) *and 'tis certain ſome of theſe Pyritæ hold ſome ſmall Portion of* Copper, *as others do of* Iron. *That Author,* (ib. *Muſ. Worm. p.* 39.) *ſpeaking of a like teſſellated Body, found upon the Banks of the River* Scald, *near* Antwerp, *judges it the ſame with the* Ludus Helmontij & Paracelſi. *He calls this Body* Silex: *and Dr.* Grew *pronounces him* miſtaken in reckoning it among Flints. (*Muſ. Reg. Soc. p.* 312.) *But in truth the Doctor himſelf is miſtaken in thinking the* Daniſh, German, *and other Writers of* Foſſils *reſtrain the Name* Silex, *to what we call here in* England, Flint; *they applying that Name to very various Bodies: and* Wormius *particularly refers the Pyrites to the Silex-kind, becauſe it* ſtrikes Fire. *He adds,* (*Muſ. Worm. p.* 39.) *that* Fr. Merc. Van Helmont, *the Son of the famous Chymiſt,* J. B. Van Helmont, *produced a Stone, as the* Ludus *of his Father, that was* very different *from the teſſellated Pyrites. His deſcription of it is obſcure: but it ſeems to have been of the ſame ſort with that exhibited in this Claſs. I my ſelf have a Stone* (*See the Catalogue of the Foreign Foſſils,* Vol. 1. N° 1.) *that was brought over, from* Antwerp, *into* England, *by* Fr. Merc. Van Helmont, *as his Father's* Ludus, *that is truly of this kind; but both the* Tali, *and* Septa, *are of a more dusky, or, as* Wormius *expreſſes it, of a more* fuliginous *Colour, than ours in* England *commonly are:* Wormius *ſuſpects this Teſtimony of the Son. For my own Part, I ſhall not enter into the Controverſy, but content my ſelf to give* J. B. Van Helmont's *Senſe in his own Words.*—— Neque enim Ludus Paracelſi parat Lixivium: ſed ſalem ex acido amarum. (*De Lithiaſi.* c. iii. §. 28. *p.* 672.) Quapropter ſuum Ludum, Fel terræ vocat. Eſt enim Lapis Siliceus, tenerior tamen, & qui ferè totus per diuturnum bidui ignem avolat; cum ſale petræ vero, multò celerius. (*ib.* c. vii.

§. 22. *p.* 699.) *And again,* — Ludus ſemper tali, teſſeræ aut cubi forma eruitur. Paracelſus *repreſents this Body as capable of diſſolving the Stone in the Kidneys and Bladder: and* Van Helmont *proceeds here to give that Chymiſt's Method of preparing of it. Afterwards he expreſly diſtinguiſhes this from the* Pyrites: *and indeed ſeems manifeſtly to deſign a Body of the very ſort with that ſet forth in this Claſs, having the* Tali *of a* pale *or grey Colour, and the* Cruſts *or* Septa, *in the* Commiſſures *betwixt the* Tali, Sparry, *and in ſome meaſure* pellucid. *This he found alſo in a Stratum of Brick-Clay: as we commonly do ours in* England. (x *ib.p.* 700.) *His Words are* — Reperi autem illud ad ripam Scaldis prope Antwerpiam, ubi lateres coquuntur: Situſque eſt plus minuſve 40 pedes ſubter horizontem, — in agro vicino, — per aliquot milliaria. — Eſt & prædicto agro Pyrites frequens, ſulphure dives atque vitriolo. Qui etſi ſub terra prædurus ſit, mox tamen ſub aura fit friabilis, fatiſcente ſcilicet ſenſim vitriolo. Sed Ludus, lapis eſt palleſcens, ſubinde Cruſtâ perſpicua per Commiſſuras obductus, magna ſui parte, in clibano figulino volatilis. Hic nempe eſt Lapis, Saxifragorum apex, & Calculoſorum deſiderium.

That Stone which B. Ambroſinus *calls* Marmor figuris Mathematicis naturaliter exaratum, Aldrovand. Muſ. Metall. p. 768. *appears, by his* Icon, *to be of the ſort ſet forth in this Claſs.*

P. S. *Since that above was wrote, Sir* I. Newton *gave me a Piece of this kind of Body brought over from* Germany *by the younger* Helmont, *as the true* Ludus *of his Father; which does not differ, either as to the Conſtitution of the Body of the* Stone, *or the* Septa, *from thoſe commonly found in* England. *The* Tali *are alſo of a grey Colour: as ours here commonly are. See the 1ſt Vol. of the Catalogue of the Foreign Foſſils. So that there can be no doubt but the Body exhibited in this Claſs is the very ſame that* J. B. Van Helmont *deſign'd by the Name of* Ludus. *But then he was greatly miſtaken in ſuppoſing this to be the* Ludus *of* Paracelſus. *The Chymiſts, and Mineraliſts of* Germany, *who are very curious in theſe Things, and very exact in their Notices and Traditions concerning them, all agree that the* Ludus Paracelſi *is the teſſellated Pyrites. And Sir* Iſaac Newton *had this very Body ſent from* Saxony *as* Paracelſus's Ludus; *of which he gave me a Specimen, which I have exhibited, amongſt ſeveral others, in the 1ſt Vol. of the Catalogue of Foreign Foſſils.* N° 2. *But yet* Van Helmont, *imagining it to be the ſame, poſitively aſcribes to this the very Powers and Vertues that* Paracelſus *does to his: and particularly that very extraordinary Power of diſſolving the Stone in Humane Bodies. Which is but one of many Inſtances of the Fondneſs and Credulity of the Gentlemen of that Study. 'Twas not a very wild Name,* Ludus, *to be given, to a* Dye, *or* Talus luſorius; *conſidering how humourous a Writer* Paracelſus *was.*

I have rarely obſerved the Ludus Helmontij *lodged ſhallower than within four Foot of the Surface, or deeper than about fifty. 'Tis* *probable it may be found to a greater Depth; but I, having obſerv'd it only in Pits wrought for Tile and Brick-Clay; and in the Cliffs on the Sea-ſhores, but never in Mines, nor where there is ſinking to a more conſiderable Depth, have had no Opportunity of making Obſervations deeper* (§). *See alſo the Regiſter of the Chymical Experiments and Tryals, with ſeveral* Menſtrua: *as alſo the Tryals in the Fire.*

The Waxen-Vein, *or* Ludus Helmontij.

x*d*1. A Stone, conſiſting of 28 Tali, diſtinguiſhed each from other, by means of certain Septa or Partitions. The Tali are oblong: and ſome of them have four, but the greater Part five ſides, which are very rarely equal. They are of different Sizes; ſome of them being as big again as others. The largeſt are about two Inches in Diameter. The Body that they, together with the Septa, compoſe, is near flat; being about the thickneſs of two Inches; which conſequently is the length of the Tali, they ſtanding tranſverſe, and paſſing directly a-croſs the Body. Tho' the ſides of the Tali be unequal, yet they are ſo fitted and placed by each other, as not ordinarily to leave any void Space. They are all made up of a very compact ſort of Stone, of a fine Grain, and a light brown Colour. The Partitions paſs quite thorough the Body of the Stone; the Edges of them appearing on each of the oppoſite flats; where they form a ſort of Net-Work. This makes a very beautiful Variegation of the Stone; the Septa being of a yellowiſh Colour, and the Tali brown. Indeed each Talus is environ'd with a Cruſt or Caſe; which, conforming it ſelf to the Sides or Planes of the Talus, is of a Figure quinquangular, or quadrangular, anſwerable to that of the Talus which it happens to cover. The Caſes, where they join and are contiguous to one another, form the Septa or Partitions. Theſe conſequently are double every where in the middle of the Stone, and on the inſides of the Tali: but on the outſide of thoſe that ſtand outmoſt and compoſe the Rim or Margin of the Stone, they are ſingle, and in Form of a Cruſt; which is of a pale yellow Colour. Theſe Caſes are compoſed of ſeveral parallel Plates, ſet one within another, and ſtriated a-croſs. They are compos'd of a talky Spar. Each Caſe is about $\frac{1}{18}$ of an Inch in Diameter: and conſequently each Partition about $\frac{1}{8}$. This very elegant and extraordinary Body was found looſe upon the Shores betwixt the Minſter and Warden in the Iſle of *Sheppy, Kent*. There were many other like Bodies lying ſcattered upon thoſe Shores for a Mile or two together; which were generally broken, worn and fretted by the Motion and Agitation of the Sea; of which there are plain Indications upon this here treated of. They are all lodged originally in Beds of Clay in the adjacent Cliffs, whence they are beaten down by the Inſults of the Sea in Storms and high Tides. I obſerved ſeveral lying in thoſe Cliffs: and cauſed ſome of them to be taken forth. They lay all flat-wiſe, or in an horizontal Poſture. They were of ſeveral Sizes. The leaſt I took notice of, was not above two Inches in breadth: the largeſt about two Foot, and a half broad, four Inches and a half thick, and pretty near round. Viewing ſeveral of thoſe that appear'd in the Brow of the Cliffs, and were actually lying in the Strata, entire, unworn, and in their native and original State, I found the Ends of the Tali naked, and that they did not differ conſiderably from thoſe that lay looſe on the Shores; nor could I find one of theſe Bodies here inveſted with an exterior ſtony Cruſt, as thoſe found near this City commonly are. The moſt regular of theſe Bodies I ever ſaw, was at my return to Town, after my Travels thorough *England*, in the Collection of Mr. *Conyers*; what is become of it now, I cannot tell. This was flat, about a Foot and a half broad, three Inches thick, and near round. The Tali were almoſt all of near the ſame Size: and their Sides near equal. The Stone that conſtituted them was very cloſe and hard, of a Foliomort Colour: and the Partitions and Cruſts of a dusky Yellow. This alſo was found ſomewhere upon the Shores of the Iſle of *Sheppy*.

x*d*. 2. Another, little different, only leſs, and compoſed of fewer Tali. Found on the ſame Shores. Part of this is poliſh'd.

x*d*.†.2. Another. *Ibid.*

x*d*. 3. A ſingle pentagonal Talus, conſiſting of the ſame ſort of Stone with that of the two foregoing: and cover'd on all the five ſides with a yellow Cruſt. 'Tis two Inches and $\frac{3}{4}$ in length, and about one Inch and $\frac{1}{4}$ in Diameter. Found on the ſame Shores.

x*d*. 4. Two Tali, one of them Quadrangular, the other Quinquangular, conſiſting of the ſame ſort of Stone with the former, having in it ſmall Sparks of Cryſtal. Each is inveſted with its proper Cruſt: yellow, and like that of the foregoing. Found on the ſame Shores.

x*d*. 5. A piece of a *Ludus Helmontij* near Square, worn and ground by the Agitation of the Sea. On one ſide of this Body, two of the Partitions, croſſing it in the middle, divide it into four near equal Parts. 'Tis obſervable that ſome of the Partitions do not quite paſs the Body: and thoſe that do are ſo thin as to appear only like a ſmall white Line on the oppoſite ſide of the Stone. In the Maſs of the Tali, appear ſome ſmall Flakes of Talc. From the ſame Shores.

x*d*. 6. Another piece, of an oblong form, worn in like manner: and divided on one ſide, by the Partitions interſecting in the Umbilicus of it at near right Angles, into four Parts. On the other ſide 'tis cover'd by a Cruſt. The Stone of the Tali is, in this, of a ſomewhat lighter brown Colour than any of the former. From the ſame Shores.

x *d*. 7. Another *Ludus Helmontij*. In this the Tali are ſmaller than thoſe of any of the foregoing, of a grey Colour, and the Stone ſofter. Found in a blue Clay in a Lane on the Weſt ſide of *Sherborn* in *Glouceſterſhire*, going down the Hill to the River. 'Tis of a compreſs'd oval Form, two Inches long, and one and a half broad.

x *d*. 9. Another piece of a ruſt Colour. The Partitions of this do not every where paſs the Body of the Stone, ſo as to part the Tali, as in the former. 'Tis worn by the Working of the Sea: and was found upon the Shores near *Burlington* in *Yorkſhire*, where they are very plentiful. This ſort is indeed found all along the Shores of this Coaſt, from *Burlington*, *Flamborough-Head*; and thence quite to *Scarborough*, where are ſeveral found, near the *Spaw*, on the Shore.

x *d*. 10. A large piece, in which ſeveral of the Tali are ſeparated from the Partitions, and are wanting, the Cells or Places of them being empty. Thoſe that remain are of a dark brown Colour, the Partitions are, as in the other, compoſed of ſeveral Plates, but more groſs than in any of the reſt. They appear outwardly of a reddiſh Colour. One or two of the Cells ſeem to have been fill'd with a talky Spar, which is pellucid with a dusky yellow Caſt, and indeed ſeems to be much of the ſame ſort with that of the Partitions. One of the Tali had a *Cornu Ammonis* immerſed in it, a Joint of it being very evident: and I think the Edges of the Shell. In a Gravel-Pit near *Oxendon-Church*. Mr. *Morton*. I found pieces of *Ludus Helmontij*, very like this, by a Brook on *Hamſtead-Heath*: as alſo in a Clay-Pit, at *Harrow* on the *Hill*.

x *d*. 11. Another, not ſo big, of an oval Figure, and worn by the Sea. The *Tali* are part of a light brown Colour, and part of a darker, ſpotted with Grey, the Spots being only the Ends of Tubes fill'd with a grey Stoney Matter. They are of that ſort which Dr. *Grew* calls the *Piped Waxen Vein*. (Claſs IV. Part 4.) The Caſes of the *Tali* are of the ſame Matter and Colour with thoſe of x *d*. 1, and 2. but ſtand further aſunder, being diſtanced by the Interpoſition of a middle Partition, that is in ſome places $\frac{2}{10}$ of an Inch over. This conſiſts of the ſame ſort of Matter with that of the *Pyrites*: and is for the main of a dusky Hue, but in ſome Parts yellow and glittering. In ſome Parts of the Body that middle Partition is diſcontinued: and the Spaces there left empty; where the two oppoſite Surfaces of the Sparry Caſes, on each ſide thoſe Spaces, are ſhot into *Tubercula & Efflореſcencies*. Shores of *Sheppy Iſland*, near *Minſter*.

x *d*. 12. A ſmall Piece of a *Talus* of the *Ludus Helmontii* of a brown Colour, with Part of a yellowiſh ſemidiaphanous Cruſt adhering to it. Upon the Outſide of the Cruſt is a Cluſter of cryſtalliz'd Grains of *Marcaſit*, ſmall, and all tending towards a cubic Figure. From the great Tile Clay-Pit near *Richmond-Wells*.

x *d.* 13. A large Piece, of a ſomewhat darker Colour. On one ſide is a large Segment of a ſhining Cruſt ſtriated a-croſs adhering to it. On the Outſide of it, at ſome diſtance from each other, are three Studs, each about ½ Inch in Diameter, of a bright ſhining yellow Braſs-like *Marcaſit*, ſet all over with ſmall ſquare Braſſy Scales. The *Sparry Plate*, as well as the *Marcaſit*, is florid, and cryſtalliz'd; the Crack, in the middle of the Body, in which they were form'd, being capacious, and affording room for theſe Cryſtallizations. All the *Tali* of this Body were variegated with a light Brown, and a dark Grey. From the ſame Clay-Pit.

x *d.* 14. Another, with two like Efflorecencies of *Marcaſit* ſtanding ſo cloſe, that they intrench ſomewhat upon one another. From ſtill the ſame Clay-Pit.

x *d.* 15. Another, very ſmall, with a like hemiſpherick *Marcaſit* affix'd upon it. Tho' this *Marcaſit* be of the Bigneſs of thoſe above, the Scales upon its Surface are much leſs. 'Tis broken, and appears within to conſiſt of Braſſy Threads, or Striæ, tending from the Surface of it to its Center. From the ſame Clay-Pit likewiſe.

x *d.* 16. A Piece of a *Talus* of the *Ludus Helmontii*, cover'd with a yellow Cruſt, on one ſide of which grows a white ſemipellucid talky Spar; compoſed, much like the *Marcaſit* in the foregoing Body, of ſeveral ſmall Filaments tending towards the ſame Center. Upon which account, Dr. *Grew* calls another like Body the *Starr'd Waxen Vein*. (Muſæum Reg. Soc. p. 312. & Tab. 21.) The Starry Cryſtallization is ¾ of an Inch over. The Surface of the Sparry Cruſt, upon which the Star is affixed, is tuberous and florid; the Crack in which the Cruſt and Star were form'd being capacious, and allowing room for thoſe Effloreſcencies. This, as alſo that of Dr. *Grew*, was found upon the Shores of the Iſland of *Sheppy*, *Kent*.

x *d.* 17. A flat Stone, made up of many *Tali* irregularly pentangular. They are ſmall, generally not above $\frac{3}{10}$ of an Inch in Diameter: and of a light brown Colour. They ſeem to be of a firmer and cloſer Conſtitution, than thoſe of any the precedent. The Partitions paſs through the Body of the Stone, appearing in much the ſame manner on the two oppoſite Flats of it. They are of a Colour darker than that of the *Tali*, and compoſed of a ferruginous or ochreous Matter. They are very thin; being only like ſo many pentangular Lines, little broader than an Horſe's Hair, deſcribed upon the two flat Surfaces of the Stone. This elegant Body I found upon the Shores of the Iſland of *Thanet*, near the *North-Foreland*.

x *d.* 18. Another, of a rounder Form; otherwiſe little different. It ſeems to have been worn by the Motion of the Sea, and by that means reduced to a rounder Form. Found along with the foregoing.

x *d.* 19. Another, ſmall, of a compreſs'd oval Shape; and a light brown Colour. Upon each of the two oppoſite Surfaces appear ſeveral black Lines, deſcribing irregular angular Figures. Theſe are only the Edges of the Septa; which, in this Body, are very thin. This was found on the Eaſt Shore of the Iſle of *Grains*, near the *Oſtium* of the *Thames*.

x *d.* 20. Another. In this the Partitions are of a whitiſh Colour, with a talky ſhining Gloſs. The *Tali* of a light Brown. Found alone in the Road at the North End of *Maſham, Yorkſhire*.

x *d.* 22. Another, in which the Partitions are in ſome parts near $\frac{1}{2}$ an Inch thick, of a dark Colour, gloſſy, and compoſed of Filaments running parallel and tranſverſe to the Planes of them. The *Tali* are of a dark grey Colour, and very hard. From *Crick* in *Northamptonſhire*. Mr. *Morton*.

x *d.* 23. Another ſmall Piece from the ſame Place, and not different, only it has a triple Partition, two Plates whereof are of the ſame Texture and Colour with the former, and each about $\frac{1}{6}$ of an Inch over; between which is interpos'd a Plate of a very white talky Spar, about $\frac{1}{16}$ of an Inch in Thickneſs.

x *d.* 24. Found near *Cole-Aſhly, Northamptonſhire*. The *Tali* of this are of much the ſame Conſtitution with that of thoſe found in *Sheppy-Iſland*, x *d.* 2. *& ſeqq.* The *Septa* are compoſed of a grey gloſſy Spar; which, in one of them, is cryſtalliz'd, and run into trigonal Shoots.

x *d.* 25. Part of a *Ludus Helmontij*, in wich the *Tali* are of a very dusky brown Colour, near black, appearing to hold Iron, as ſeveral of theſe Bodies do. The *Septa* ſeem to be compoſed of various thin Plates, they being all lineated length-ways. They are ſtriated acroſs, in a manner not very unlike that of the Cruſts of the *Hæmatites*. There are Sea-Shells immers'd in ſeveral Parts of it; one of which ſeems to be interſected by a Sparry *Septum*. If that be really ſo, 'twould be a Proof that the *Septa* and *Tali* were not form'd at the ſame time; but that theſe Bodies have been burſt or chink'd ſince their firſt Conſolidation, and the Chinks afterwards fill'd with a Sparry Matter that inſinuated itſelf into them. When 'tis expos'd on the Surface of the Earth to the Air and Weather, it ſhatters and falls to pieces. Of this there were ſeveral Inſtances in the Heap flung by the Workmen out of the Tile Clay-Pit where I found this Body; which is upon the very Top of *Shooter's-Hill*. There are ſeveral Clay-Pits upon and about that Hill: and the *Ludus Helmontij* is found in moſt of them. By the Samples I ſaw there of that Body, it appears plainly to have been a Nodule: and moſt of thoſe I obſerved in that Place, were externally inveſted all over with Cruſts, from $\frac{1}{4}$ of an Inch, to an Inch in thickneſs, compoſed of a pale brown Stoney Matter. The Bodies were of ſeveral Sizes, up to the Bigneſs of a Man's Head. In the Cliffs of *Sheppy Iſland*, I formerly took notice of ſeveral that were much larger; of which ſee x *d.* 1. *ſupra.*

x *d.* 26.

x *d*. 26. A Piece of one of the aforemention'd Cruſts. From the ſame Clay-Pit.

x *d*. 27. Part of another *Ludus Helmontij*, little different from that x *d*. 25. and found in the ſame Pit. 'Tis obſervable, that there is in this a Suture, running croſs one of the Septa, where another comes up to and joins it. There are inclos'd in this alſo ſeveral ſmall Bivalves, of the ſame Kinds with thoſe commonly met with in the Sand-Pits and Clay-Pits about *Black-Heath*.

x *d*. 28. Part of a *Ludus Helmontij*, of a pale brown Colour. In this, and in ſeveral others, I ſaw in the ſame Pit, is a Mixture of Matter that is yellowiſh, and in Conſiſtence very like Yellow-Ochre. The Partitions are ſtriated acroſs: and, as they tend towards the Cruſt, they gradually leſſen. One of them alſo divaricates into two: and another into ſeveral ſmall ones. The ſame I obſerved in others of theſe Bodies there. They ſometimes enter into the Body of the exterior Cruſt: but I never ſaw any that quite paſs'd it to the Surface. This Piece was found in a Tile Clay-Pit near *Peckham*, in *Surrey*. I obſerved here, in ſome of theſe Bodies, thoſe fuliginous Delineations of Shrubs, call'd commonly by Writers *Dendritæ*: and theſe upon the *Tali*, on each ſide the *Septa*. Moſt of theſe Bodies here were externally cover'd with a Cruſt. They were of all Sizes to the Bigneſs of an Horſe's Head: and generally of a compreſs'd or flattiſh Form. I obſerved in the ſame Pit, other Bodies of like Form and Bulk: but conſtituted of a gritty Sand, and compoſed of Cruſts alternately grey and brown, in manner of the *Bezoar Minerale*.

x *d*. 29. Part of another, the *Tali* of a deep brown Colour, with a Bluſh of Purple, very like ſome Iron Ores, and ſeeming to hold ſome of that Metal. The Septa, or Partitions, are ſtriated, both long-ways and croſs-ways: and upon one there are Veſtigia of Sutures, where the other croſs Septa come up to, and join it, as in x *d*. 27. Out of a Tile Clay-Pit at *Norwood*, about a Mile from *Croydon*, *Surrey*.

x *d*. 30. A *Ludus Helmontij*, the *Tali* outwardly of a pale brown Colour, and grey within. The Septa terminating ſharp, in Edges, on all Sides of the Body. Where broken, they appear to be ſtriated both length-ways and croſs-ways. This Body ſeems to be intire, and not to have been inveſted with a Cruſt. Out of the great Clay-Pit at *Richmond*, *Surrey*. Theſe Bodies are found in this Pit in great Numbers, and of all Sizes, to double the bigneſs of an Horſe's Head. The greateſt part of them are inveſted with Cruſts. In breaking ſeveral of theſe, I obſerv'd, immers'd in the Maſs of the *Tali*, Sea-Shells, both turbinated and bivalve, of the very ſame ſorts with thoſe commonly found lodg'd in the Clay of this Pit. Theſe Bodies, when expos'd to the Air and Weather here, and in the other Tile Clay-Pits of *Middleſex* and *Surrey*; in moſt of which they are found, ſhatter, in time, and fall to pieces.

x *d*. 31. A Piece of a *Ludus Helmontij*, in which the Septa are of a dark grey Colour in the Middle, and white on each Side. From the ſame Clay-Pit, at *Richmond*.

x *d.* 32. Another, that appears to have been expos'd to the Weather, and fretted. In this the Septa gradually leſſen, and come to an Edge, as they approach the external Cruſt. From the ſame Clay-Pit.

x *d.* 33. Part of a *Talus* of another, ſtill from the ſame Clay-Pit. The *Septum*, adhering to the Surface of this, is ſhining, gloſſy, and appearing very much like Velvet. 'Tis indeed little different from that on x *d.* 13, and x *d.* 14. only the Colour is deeper, or more dusky than in thoſe.

x *d.* 34. A Fragment of a *Ludus Helmontij*, found in a Brick Clay-Pit North of *Lamb's-Conduit.* The Surface of the *Septum*, adhering to it, is gloſſy, and much like that of the precedent. I obſerved in ſeveral of the Maſſes of *Ludus Helmontij* in this Pit, the Septa were, in ſome Parts of the Body, diſcontinued, and the Spaces not fill'd : but empty, in form of Cracks.

x *d.* 35. Part of a *Ludus Helmontij*, the *Tali* brown; but externally, and where contiguous to the *Septa*, of a dusky Iron-Colour. (*Conf.* x *d.* 41. *infra.*) The *Septa* are finely plated, and ſtriated acroſs. Found in a Tile Clay-Pit, at the South-Eaſt Side of *Highgate.* This was broke off that x *d.* 43.

x *d.* 36. A *Talus*, with part of two or three others adhering to it; as alſo the *Septa*, which are plated; and ſtriated acroſs. In this there is a Vacancy in the middle of one of the *Septa*, in form of a Crack or Vein: and the Plates on each ſide have the Surfaces gloſſy, like thoſe mentioned x *d.* 33, and x *d.* 34. This Gloſs, and various Reflection of the Light, ariſes from the ſhooting of the Spar into extremely ſmall Cryſtals, on the two oppoſite Sides of the Crack; that Crack allowing it room to ſhoot and cryſtallize in. Which doubtleſs was the Caſe of all the Plates that are found with their Surfaces thus cryſtalliz'd. (*Confer.* x *d.* 11. *ſupra.*) From the ſame Pit with the foregoing.

x *d.* 37. Part of a *Ludus Helmontij*, found amongſt ſeveral others in a Tile Clay-Pit, about two Miles from *Layton-Stow*, in *Epping-Foreſt.* In this the *Septa*, paſſing from the Center towards the external Cruſt, become gradually leſs: and, in one part, there ariſe from the Surface of a Plate, Cryſtals ſomewhat larger than in any of the foregoing Bodies.

x *d.* 38. Part of another *Ludus Helmontij*, from a Brick Clay-Pit betwixt *Marybon* and *Soho.* The Sparry Partitions, in this, approaching towards the Outſide of the Body, grow gradually leſs: and one of them divaricates into four ſmaller Branches. Theſe Bodies in this Pit, in that on the backſide of *Gray's-Inn*, thoſe by *Hogſdon, Iſlington*, and ſome others that lie North of the Town, are commonly round: and of a flat or compreſs'd Shape. In theſe the Septa run ordinarily acroſs them: and are largeſt in the Middle; gradually leſſening as they approach the two oppoſite Flats. Some I obſerv'd, in all thoſe ſeveral Pits, in which there were only tranſverſe Cracks, without any Spar at all in them to compoſe the Septa. Some others, like *Ludus Helmontij*, with like

Cracks in them, I obſerved in a Tile Clay-Pit at *Holloway*, near *Highgate*.

x *d*. 39. A Piece of a *Ludus Helmontij*, from the Tile Clay-Pit at *Kilburn*, near *Marybon*.

x *d*. 40. Six Pieces of a *Ludus Helmontij*, in which are immerſed great Numbers of a ſort of *Pectunculus*. The *Septa* paſſing towards the exterior Cruſt gradually leſſen, as in the precedent. Several of the Shells are broke; and have the *Septa* directly paſſing thorough thoſe Breaches. This imports that the Stone was broke after 'twas conſolidated, and the Shells incorporated with it; and that the Spar, that conſtitutes the *Septa*, only ſucceeded and fill'd up the Cracks. Cryſtal is one of the moſt obvious Minerals of this Country; and the Fiſſures of the Strata of Stone in moſt parts of *England* have conſiderable Quantities of it, partly pure, but much more commonly mix'd, and in form of Spar, collected and drain'd into them. This was repoſited, originally, diſperſedly, and in ſingle Particles, or at leaſt very ſmall *Moleculæ*, in the Interſtices of the Sand that compoſes thoſe Strata of Stone. They muſt have been extremely *ſmall*, or they could not have paſs'd the Pores and Interſtices of the Stone, as 'tis apparent they did, in order to get into the Fiſſures of the Strata of Stone, the Cracks of the *Ludus Helmontij*, and other Bodies. Theſe Cryſtalline Particles are, in like manner, mingled and interſperſed among the Earth, Clay, or other like Matter that compoſes the laxer Strata. Now the Parts of this Mineral being ſmall, light, and diſpoſed to be moved along with the Water and Humidity which is continually paſſing the Strata, it is commonly derived and drain'd out of them, and convey'd and repoſited in the Cracks and Fiſſures of Stone. For theſe give way to the Motion of the Water; which therefore naturally tending towards them, carries the ſparry Corpuſcles along with it thither, where there is Room and Reception for it, and where it affixes and concretes to the Stone on the Sides of the Cracks and Fiſſures. By this means the Spar, and other Mineral and Metallic Matter, is brought into the perpendicular Intervals of the ſolid Strata *. By the ſame means the ſparry Veins are form'd in ſeveral ſorts of Stone; as alſo theſe *Septa* in the *Ludus Helmontij*. I have taken notice elſewhere (o. 105. *infra*) of a ſort of Spar compoſed of Cryſtal and *Lac Lunæ*. This, that conſtitutes theſe *Septa*, is compoſed of Cryſtal, with an Intermixture of a fibrous Talc. There is likewiſe a ſlight Proportion of other Matter, ſometimes Mineral, and ſometimes Metallic, in ſeveral of them; nay, ſome of them ſeem to hold ſome ſmall ſhare of Vitriol in them.

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* *Nat. Hiſt. of the Earth, Part* IV. *Conſec.* 4, 5, & 6.

The *Septa* in this, and other of theſe Bodies, gradually leſſen as they approach the outer Cruſt, and terminate without ever reaching it: as do alſo the Chaſms or Cracks, of which there is an Example in the foregoing; but the Bodies might have been crack'd in their interior Parts, and yet the Cracks not always extend to the Surface. Of this we have Proofs and Inſtances in the cracking of Clay, and of Timber, as they dry, and certain Parts growing cloſer, quit others. In Timber, or Trees fell'd, upon the Sun's drawing forth the Sap, the Knots are the apteſt to crack. Again, Spray-Wood in charring, parts frequently into various Cracks, made from the Axis of the Spray towards the Surface; but terminating before they reach the Surface. Which is the very Caſe of thoſe *Ludi Helmontij*, whoſe Cracks or *Septa* do not paſs the outward Cruſt.——In *Lud. Helm. f.* 434. of the ſecond Part of this Catalogue, one of the *Septa*, approaching a firm robuſt Shell, fill'd with a very hard *Pyrites*, divides into two; ſo as to attend the Surface of the Shell, incompaſs it, and take the Impreſſion and Figure of it. From a Tile Clay-Pit on the Eaſt-ſide of *Highgate*, near the top of the Hill, which indeed appears to be the higheſt Ground thereabouts for ſeveral Miles round. The Shark's-Tooth, N° 69. of the ſecond part of this Catalogue, was found in the ſame Pit. Theſe here, the Sharks-Teeth found on one of the higheſt Hills in *Epping-Foreſt, ibid.* N° 70. thoſe found at *Harrow on the Hill*, N° 67 x. and thoſe found in that Hill above *Richmond* in *Surrey*, N° 64. along with a great Variety of Sea-Shells, afford us Inſtances of Remains of the Deluge in ſeveral of the higheſt Parts of the Country hereabouts. Like Inſtances there are, in the other Catalogues, of thoſe Remains depoſited in the higheſt Hills of the other Counties of *England*; as well as in thoſe of foreign Countries.

x *d*.41. Part of a *Ludus Helmontij* of that flat ſort mention'd x *d*. 38. Found in a Brick Clay-Pit, North from *Grays-Inn*, near *Pindar of Wakefield*. 'Tis broke thro' the middle; from whence the *Septa*, tending towards the Surface, gradually leſſen: and terminate before they reach the Cruſt. The *Tali* are of a grey Colour, as alſo the Cruſt; only this has withal a Caſt of brown. There were, as in Flints*, and many other Foſſils, in this, and others of theſe Bodies, ſeveral Cracks, ſo fine as not to appear to the naked Eye, only the Bodies in breaking, eaſily part, and fall to pieces at them; and the Bodies on each ſide the Cracks are tinged with a reddiſh or Iron Colour. But neither thoſe Cracks, nor that Colour, pervaded the external Cruſt. *Conf.* x *d.* 35. *ſupra.*

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* *Flints are found very commonly in the Earth crack'd, and parted into various Segments, particularly in the Gravel-Pits on the Eaſt-ſide of* Hyde-Park. *And there are frequently* Dendritæ *delineated on theſe, in like manner as ſometimes on the* Ludus Helmontij.

x *d.*42. Part of a Cruſt of a *Ludus Helmontij*, of an ochreous, or yellow Colour; appearing to be compoſed of numerous thin parallel Plates. 'Twas not ſo firmly join'd, but that it parted eaſily from the interior Body, as if there was only a lax and ſlight Adheſion of the Cruſt to that Body; the *Tali* of which were of a Ruſt Colour. From a Tile Clay-Pit, in a Field near *Pancridge*. The *Ludus Helmontij* that is inveſted with a Cruſt, originally, before 'twas crackt, and the Septa form'd, appears to have been nearly related to the *Bezoar* Mineral. And indeed thoſe mentioned. x *d.* 28. *ſupra*, are no other than *Ludus Helmontij* not crack'd.

x *d.*43. A large Piece of a *Ludus Helmontij*, part of the ſame with that x *d.* 35. The Body was of a flat compreſs'd Form, roundiſh, and very large; being, in moſt parts of it, about 14 Inches thick, and near 3 Foot broad. It lay in the Bed of Tile-Clay, about 8 Foot deep, flatways or horizontally, as did thoſe I obſerved in the Cliffs of *Sheppey* Iſland; and indeed all the Flints, *Pyritæ*, and other Nodules, (all which were form'd in the Water at the Deluge, before the Subſidence †,) that are of like Shape. The Foſſil Bivalves, and other flat Shells, lie generally in the ſame Poſture into which all theſe would naturally ſettle at their Deſcent from the Water. Theſe broad flat Bodies being thus found univerſally in all Parts of the Earth repoſited flatways, or parallel to the Strata in which they lie, is one of the many Arguments there are, that they, and the Matter amongſt which they lie, ſubſided from a Fluid in the ſame manner all round the Globe. In this Piece the Septa are very finely plated, and ſtriated acroſs. Tending towards the exterior Surface they gradually leſſen, and ſome of them divaricate into ſmall Branches. Found in a Tile-Clay-Pit on the S. E. ſide of *Highgate*, *Middleſex*.

x *d.* 44. Another Piece of the ſame Stone.

x *d.* 45. Part of a *Ludus Helmontij*, alſo from the ſame Pit. This ſhews very fairly the gradual Diminution of the Septa, as they approach the Surface of the Body, as alſo the Manner of the Application of the Spar to the Tali on each Side the Cracks, and the ſucceſſive Formation of the ſeveral Plates that compoſe the Septa; which indeed the following and ſeveral others do.

x *d.* 46. Another from the ſame Pit; the Septa finely plated, and ſtriated.

x *d.* 47. Another, likewiſe from the ſame Pit. Thorow the middle of one of the Tali of this there paſſes a thin Septum, that alſo paſſes and interſects one of the larger or common Septa. The Crack, which this Septum fills, was apparently made, not only ſince thoſe Cracks in which the larger Septa are, but even ſince thoſe larger Septa themſelves were formed. Of this there are alſo like Inſtances in the three following Bodies. Indeed the Partitions in the *Ludus Helmontij* appear not only to be made by the cracking and ſtarting of the Parts, but 'tis manifeſt that thoſe Cracks were made by the Body ſhrinking and contracting at different, and conſiderably diſtant, times, ſucceſſively, each after other.

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† *Conf. Nat. Hiſt. Earth, Part* iv. *Conſ.* 2. 3. *where theſe Particulars are made out.*

x *d*. 48. Another from the ſame Pit.

x *d*. 49. Another from ſtill the ſame Pit.

x *d*. 50. Another, from the ſame Pit alſo.

x *d*. 51. A *Ludus Helmontij*, with part of the Cruſt broken off, to diſcover the interior Conſtitution of it. 'Twas of an oval Figure, near one Foot in Length, and above ½ Foot over. The Septa are veined, and ſtriated acroſs. Paſſing towards the Cruſt, they gradually leſſen; from ſtill the ſame Pit. The Maſs of the Tali is in ſome Parts of a light brown, and in others of a dark grey. Even the different Parts of the ſame Talus are of thoſe two different Colours, and the Cracks and Septa uncertainly and indifferently paſs both.

x *d*. 52. Part of another, leſs, from the ſame Pit. 'Tis of a compreſs'd Form, the interior Parts are of a deep brown, and the Cruſt of an ochreous, or light brown. The Septa generally paſs croſs-ways, and from Flat to Flat, gradually leſſening towards each Extreme, as they approach the environing Cruſt. I have obſerv'd very many of the *Ludus Helmontij* of a grey Colour, in the Clay-Pits in the Fields all along the North Side of *London*, from *Hogſdon* to *Padington*, that have the Septa of like Conſtitution, and croſſing the Bodies in the ſame Manner.

x *d*. 53. A *Ludus Helmontij*, of a flat compreſt Shape, 9 Inches in length, 7 in breadth, and 2½ in Thickneſs, in the middle, from which it gradually thins, and leſſens towards the Edges. The Stone is very compact, hard, and of a dark grey Colour. The Septa are of a talky Spar; white, with a Caſt of Yellow. They are very numerous, and ſtand very thick in the Stone. From *Low-Eaſtoft* in *Suffolk*.

x *d*. 55. *Ludus Helmontij*, the Stone of a very pale brown Colour, the Septa white, with a Caſt of yellow. The Surfaces of the Plates that conſtitute thoſe Septa, are in ſome Parts ſhot into extreme ſmall Cryſtals. Where this happens, there are betwixt the Plates, Hollows and Intervals, where commonly the Stone parts in breaking, which this alſo did, except only on one Part, where one of thoſe Intervals is obſervable. This was found, among ſeveral others, about 12 Foot deep, in ſinking near the *White-Tower*, within the Precincts of the Tower of *London*.

CLASS

CLASS IV. PART V.

Lapis Syringoides, *s.* Tubulis refertus. *The Piped Waxen Vein*. With an Appendix relating to the Piped Pyrites.*

EXTRACT.

C. 1. Of the *Tubuli* or Pipes.

The Pipes are of a yellow Colour with a Caſt of green. ‡ *d.* 1.

—— and are compos'd of various Cruſts, including one another, and ſtriated acroſs; like the Septa of the *Ludus Helmontij.* ‡ *d.* 3. 5.

They conſiſt alſo of a talky Spar, much like that of thoſe Septa. ‡ *d.* 1.

—— and are moſt of them about the Thickneſs of a Swan's Quill. ‡ *d.* 1.

—— generally round, but ſome of them compreſt. ‡ *d.* 1. 10. 14.

They lie ordinarily all the ſame way, and parallel to each other. ‡ *d.* 1.

—— tho' ſometimes they vary in their Poſtures, and lie croſs one another. ‡ *d.* 5. 9. 13. 21. 22.

They are commonly pretty ſtreight. ‡ *d.* 1. *& ſeq.*

—— but ſome of them are inflected. ‡ *d.* 12. 18.

They are not ever in equal Number in all Parts of the Stone, but lie thicker in ſome Parts than in others. ‡ *d.* 15.

In ſome of theſe Bodies they are covered with a fine Reticulum of a blackiſh Colour, and riſe into various round Tubercles. ‡ *d.* 14.

Many of them are empty, and parted into Cells, by tranſverſe Diaphragms. ‡ *d.* 1. 2. 3. 18. *Conf. Cl.* 5. § 2. *Part* 2. *infra.*

The Cells are thick ſet, and lined with ſmall Cryſtals, like thoſe of the Septa of the *Ludus Helmontij,* where the Plates part ſo as to leave an Interval for thoſe Cryſtals to ſhoot in. ‡ *d.* 5.

Some of them are filled with a grey ſtoney Matter, ‡ *d.* 1. 10.

Others with a white talky Spar. ‡ *d.* 9.

Others with a *Pyrites.* ‡ *d.* 1.

Some of them are compoſed of a Cruſt of *Pyrites* within a Cruſt of Spar. ‡ *d.* 8. 15.

Others conſiſt intirely of a yellow ſhining *Pyrites.* ‡ *d.* 18. *& ſeq.*

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* *Dr.* Grew, *Muſæum Reg. Soc.*

In ſome, the tubular Pyritæ, tho' within of a braſſy ſhining Conſtitution, are externally Black, and ſtriated lengthways, partly empty, only having in them various Efflereſcencies of the *Pyrites*, very bright, fine and glittering with yellow, green, blue, and other Colours, and partly filled with a grey ſtoney Matter. ‡ *d.* 16.

C. 2. *Of certain Partitions in this Body, like thoſe of the* Ludus Helmontij.

In ſome of theſe Bodies are Septa of a yellow talky Spar, not differing from that of the Tubes. They are compoſed of various Plates, ſtriated acroſs, and exactly of both the ſame ſort of Matter, and the ſame Conſtitution with the Septa of the *Ludus Helmontij.* ‡ *d.* 5. 7. 10. 23. *Conf.* ‡ *d.* 5. *&* x *d.*40. *Append.*

The Surfaces of theſe Septa are ſometimes thick-ſet with cryſtallin Shoots, exactly like thoſe of the Septa of the *Ludus Helmontij.* ‡ *d.* 17.

And ſometimes likewiſe riſe into ſmall botryoid Tubercles, like thoſe of the *Hæmatites*, which the Surfaces of the Septa of the *Ludus Helmontij* likewiſe ſometimes do. ‡ *d.* 5.

C. 3. *Of the Stone in which the Pipes are immers'd.*

A black Stone, with Sparks of a braſſy *Pyrites* in it. ‡ *d.* 13.

A grey Stone thick ſet with ſmall Tubercles. ‡ *d.* 11.

A Stone, in ſome Parts brown, in others grey. ‡ *d.* 10.

Another like Stone with *Pyrites* in it. ‡ *d.* 14.

Some Inſtances there are of this Stone of a brown Colour, and compoſed of Fibres, running all acroſs to the Site of the Pipes. ‡ *d.* 1.

Others compoſed of Fibres running lengthways, or parallel to the Pipes. ‡ *d.* 5. 6.

A few there are that reſemble petrify'd Wood. ‡ *d.* 10.

As alſo that reſemble charr'd Wood. ‡ *d.* 12.

Some of theſe Bodies, like the *Ludus Helmontij*, are externally covered over with a ſtoney Cruſt. ‡ *d.* 11. 13. *& ſeq.*

C. 4. *Of the Origin and Formation of the* Lapis Syringoides.

Theſe Bodies are frequently found lodg'd in Beds of Clay along with the *Ludus Helmontij*; and, as ſeveral of that kind, ſo ſome of theſe alſo are externally inveſted with a ſtoney Cruſt. ‡ *d.* 11. 13. 14. 15. The Pipes differ indeed in Form from the Septa of the *Ludus Helmontij*, but they agree with them in all other reſpects, *e.gr.* They conſiſt of various Cruſts, ſet one within another. Theſe are ſtriated acroſs, and compoſed of talky Spar, of the very Colour and Conſtitution of that of thoſe Septa. This Spar is cryſtalliz'd alſo, in like manner as in thoſe, and has ſometimes Cruſts of *Pyrites* of the ſame ſort that thoſe have. Nay, there are Inſtances of this Stone's being interſected by Septa of the ſame

Nature and Texture with thoſe of the *Ludus Helmontij*. In fine, 'tis without Conteſt, that the *Lapis Syringoides* is a Nodule, and was formed at the ſame Time, and by the ſame Means that all other Nodules were*. But as to the Pipes in it, the Samples I have met with, and the Obſervations I have hitherto had opportunity of making, have not exhibited Phænomena numerous enough, or afforded Light ſufficient, either to clear the Natural Hiſtory of them, or determine my Judgment as to their Origin, which therefore muſt be ſuſpended and reſerved to future Enquiry.

Mean while, if I might be permitted to offer a Conjecture in ſo abſtruſe and uncertain an Affair, it ſhould be, that as the *Ludus Helmontij*, and the other Nodules have in them Sea-Shells that were incorporated with them during the Time of their Formation in the Water at the Deluge, ſo theſe Stones had then incorporated with them teſtaceous Tubules, related to the *Siphunculi*, or rather the *Vermiculi marini*. And there are ſeveral of them, particularly that ‡ *d*. 3 *. that exactly reſemble thoſe Bodies, and are not to be diſtinguiſh'd from them. That Stone likewiſe ‡ *d*. 12. has in it ſeveral Tubules that appear to be not ſparry, but really teſtaceous. Now if there were thus tubular Shells originally incorporated with, and immers'd in the Stone, they might be eroded, and in tract of Time quite diſſolved by the Vitriolic Salts, with which the *Pyrites* abounds, and which are ſo plentiful in the Clay of that Pit near *Richmond*, wherein the greater part of theſe Bodies were found, as to impart a purging Quality to the Water that ariſes out of it. And as much of the ſaid teſtaceous Matter of the Tubules as was ſo eroded, would be ſucceſſively, in the uſual manner, ſupply'd by Spar, brought by little and little, and depoſited in the room of it, by the Water that is ever more or leſs impregnated with ſparry Matter, and is continually pervading the Strata. Or, where that Water happen'd to be more copiouſly ſaturated with the Corpuſcles that conſtitute the *Pyrites*, it would depoſit them, and ſo form the Tubular *Pyritæ*. At leaſt it is very certain, that this was the Caſe of ſeveral ſparry Bodies in form of *Conchæ*, *Cochleæ*, and other Sea-Shells, of which there are many Inſtances in the ſecond Part of this Catalogue. ‡ *d*. 23.

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* *Vide Nat. Hiſt. of the Earth*, *Part* iv. *Conſ.* 2. 3.

CLASS

CLASS IV. PART V.

Lapis Syringoides, *s.* Tubulis refertus. *The Piped-Waxen-Vein. With an Appendix relating to the Piped* Pyrites.

‡ *d.* 1. A flat Stone, broken ſo as to ſhew the interior Conſtitution of it, in which are ſeveral Tubes, moſt of 'em ſtreight, and lying parallel to each other. They are chiefly of a yellow Colour with a Caſt of green, and run through the whole Length of the Stone, which is 4 Inches ½. The Thickneſs of the Sides of the Tubes is about one 20th of an Inch; the whole Tube generally about the bigneſs of a Swan's Quill, only ſome few there are leſs. Moſt of 'em are empty, and are parted at ſome Diſtances into ſeveral Cells, by Valves, or rather Diaphragms, conſiſting of the ſame Matter with the Tube. A few of them are wholly filled with a grey Stoney Subſtance, and one or two with a *Pyrites*. The Stone in which theſe Tubes are contain'd is of a brown Colour, and is made up wholly of Fibres which run directly tranſverſe to the Poſition of the Tubes. From the Shores of *Sheppey* near *Minſter*.

‡ *d.* 2. Two Tubes broken off from the foregoing Stone: and ſhewing very plainly the Diaphragms above-mention'd. The Tubes of theſe, and of ſeveral of the following, are compoſed of various Cruſts, including one another: and ſtriated a-croſs; like the Septa of the *Ludus Helmontij*.

‡ *d.* *3. Several Tubes, ſome ſtreight, others crooked, lying together in the manner of the Shells of *Vermiculi marini*. There is in the Middle one larger than any of the foregoing. There is little Stone with theſe. From the ſame Shores.

‡ *d.* 4. A Maſs of Stone, like that ‡ *d.* 1. with ſeveral Tubes in it ſomewhat larger than thoſe in that. From the Shores of *Sheppey Iſland*.

‡ *d.* 5. Another Stone, in which the Tubes are of much the ſame Size, Colour, and Matter: and plac'd in the ſame manner with thoſe of N° 1. Only there is one tranſverſe to all the reſt, and is double, having a ſmaller Tube included in it, the End where broken appearing not unlike one of the cruſted *Belemnitæ*. The Stone in which theſe Bodies lie, is of a much darker Brown than N° 1. but conſiſts of Fibres, not tranſverſe, as that does, but parallel to the Length of the Body, and the Generality of the Tubes. This being broke, parted at a Plate of like Conſtitution

with the Septa of the *Ludus Helmontij*; where doubtleſs was a Crack: and the Sparry Matter ſucceſſively filling it, form'd the Plate; which is of the ſame Colour and Matter with that of the Tubes. Its Surface riſes up every where in ſmall Bubbles, not unlike thoſe of the *Botryoid Hæmatites*, N° 0. 42. and is ſtriated a-croſs, as the Tubes in this Body, and the Cruſts of that *Hæmatites* are. Found in the great Clay-Pit by *Richmond-Wells*. The Tubes conſiſt of various Cruſts, ſtriated a-croſs; and having the Bore or Cavity thick ſet with extreme ſmall Cryſtals, like thoſe in the Intervals of the Plates of the *Ludus Helmontij*.

‡ *d*. 6. A Piece in which the Tubes differ little from thoſe of the immediately foregoing: and the Stone in which they lie, is ſtriated length-ways, as that is. From the Shores of *Sheppey*, betwixt *Minſter* and *Warden*.

‡ *d*. 7. Another, with a Cruſt upon it of the ſame nature with that of the Tubes, riſing up into ſeveral Bubbles, cluſter'd together, and ſet all over with extreme ſmall cryſtalliz'd Shoots of the ſame Matter. From the great Clay-Pit at *Richmond-Wells*.

‡ *d*. 8. Another, in which ſome of the Tubes are lined, and others fill'd with a glittering *Pyrites* of a Copper-Colour. From the ſame Clay-Pit.

‡ *d*. 9. Another, very much worn, and ground by the Motion of the Sea. This is very thick ſet with Tubules in various Poſitions, moſt of 'em ſmaller than thoſe of the foregoing, and fill'd, ſome with a grey Stoney Matter, and others with a white Talky Spar. From the Shores of *Sheppey Iſland, Kent*.

‡ *d*. 10. A large Stone, in ſome places grey, in others of a dusky Brown: with Fibres all placed length-ways of the Stone, and very much reſembling petrified Wood. In the brown part of the Stone, there appear ſeveral thin Tubes, ſome round, others of a compreſs'd Shape, all fill'd with the ſame ſort of grey Matter that the other part of the Stone conſiſts of. There are in it a few Veins of a yellowiſh Talky Spar, of the ſame kind with that of the Tubes mention'd above. Upon the Shores of *Sheppey*. *Vide* ‡ *d*. 14.

‡ *d*. 11. A grey Stone, the Surface of which, on one ſide, riſes into ſeveral round Knobs, about the bigneſs of Peas, ſet very cloſe together. Whether they be the Ends of the Columns of Matter, filling tubular Bodies, like thoſe before mention'd, is not eaſy to determine; but they ſeem not to paſs deep into the Subſtance of the Stone. Found in the great Clay-Pit, near *Richmond-Wells*.

‡ *d*. 12. A large Piece of the *Piped-Waxen-Vein*. The Tubes in this, are much of the ſame Subſtance, Colour, and Size with thoſe in ‡ *d*. 1. but are neither ſo ſtreight, nor do they lie all parallel to one another, as in that. Some of them are empty: and many fill'd with a Stoney Matter of the ſame ſort with that wherein they are immers'd; which, in ſome parts, is of a light brown Colour; in other, of a deep grey, and on one ſide of a dusky brown, with parallel Fibres, much reſembling Charr'd-

Wood, both in Colour and Texture. From the great Clay-Pit at *Richmond.*

‡ *d.* 13. Another. In this the Tubes are little different from the foregoing, but that they lie all together, very thick, and in various Poſitions in the middle of the Stone. The Part in which they lie, is near black, with ſome Sparks of a Braſſy *Pyrites* in it. The Cruſt incloſing this has no Tubes in it: and is of a light grey Colour. From the ſame Clay-Pit.

‡ *d.* 14. A Piece of Stone much like ‡ *d.* 10. and with like Tubes alſo in it, ſome of them round, others compreſs'd, and ſome very much ſo. The Tubes are coated with a fine blackiſh *Reticulum.* On one Surface the Tubes bunch out into round *Tubera,* like thoſe of ‡ *d.* 11. but bigger. Being broke on one ſide, there appears a conſiderable Quantity of a ſhining Braſſy *Pyrites.* From ſtill the ſame Pit. *Confer. h.* 40.

‡ *d.* 15. Part of a large flat Nodule, gritty, and of a grey Colour. Thorough the middle of the whole Body paſs'd a large Vein of a blackiſh Matter, thick ſet with Tubules, partly compoſed of Spar, and partly of Pyrites. That ‡ *d.* 13. is of the ſame ſort with this: and found in the ſame Clay-Pit at *Richmond.*

‡ *d.* 16. Part of a large Nodule, compoſed chiefly of parallel Pipes, of Pyrites, of a grey ſhining metallic Complexion. Externally they are blackiſh: and ſtriated length-ways. The greateſt part of them are fill'd with a grey Stoney Matter. In the few that are not fill'd, are Effloreſcencies of Pyrites, very bright, and ſhining, partly yellow, partly of a flame-colour, green and blue. From the great Tile Clay-Pit, near *Richmond, Surrey.*

‡ *d.* 17. Another Piece broken off the ſame Body: as were alſo the five following.

‡ *d.* 18. Another. In this ſeveral of the Tubules are bended: ſome of them compoſed of Spar: and one divided into Cells, by means of tranſverſe Septa.

‡ *d.* 19. Another.

‡ *d.* 20. Another.

‡ *d.* 21, 22. Two more, ſtill broken off the ſame Body. In theſe the Tubules lie in diverſe Poſitions: and ſome are placed directly croſs the reſt.

‡ *d.* 23. A Piece broke off a Nodule that was of the bigneſs of an Horſe's Head; compoſed of a grey Stone, partly clear, and partly thick ſet with ſparry Tubes, tapering, and much reſembling the Shells of the *Siphunculi marini.* They generally lie parallel to one another; but ſome few croſs-ways. In one Part of the Body is a Septum of Spar, ſtriated a-croſs, like that of the Septa of the *Ludus Helmontij:* and ſubdivided into ſeveral Branches, which leſſen gradually as they approach the Surface of the Body. The Tubes and Septa are compoſed of Spar, of like Colour and Conſtitution. In one Part of the Body are numerous ſmall Bodies, chiefly oblong, round, and in Form of Worms. They are black externally. Within, part of them are grey, conſiſting of Stoney

Matter, of like Conſtitution with that of the common Maſs of the Nodule: and part yellow, and ſhining, being compoſed of *Pyrites*. Out of the great Clay-Pit. *Richmond, Surrey.*

CLASS IV. PART VI.

Belemnites. *Vide* Part VI. *infra.*

EXTRACT.

C. I. Of the *Conic Belemnites.*

§ 1. Of the Shape of this Body.

Conic, and terminating in a Point, * *d.* 1. *& ſeqq.*

A Suſpicion that this Body is broken: and was originally pointed at both Extremes, * *d.* 45.

It is generally round, * *d.* 1. *& ſeqq.* 20.

In ſome a little flattiſh, or compreſs'd. * *d.* 20.

§ 2. Of the ſeveral Magnitudes of the *Conic Belemnites,* * *d.* 1. 14. 15. 17. *17. 19. 32. 37. 40.

§ 3. Of the Colour of this Body.

The *Conic Belemnites* of a blackiſh Colour, * *d.* 30. 31.

—— Of a dark Aſh-Colour, * *d.* 12.

—— Of a dark Brown, * *d.* 8. 9. 13. 14. 18.

—— Of a light Brown, * *d.* 1.

—— Of an Amber Hue, with ſome degree of Diaphaneity, * *d.* 10. 11 16. 17. 40.

§ 4. Of the external Conſtitution of this Body.

The Surface of the *Belemnites* is ſmooth. * *d.* 5.

Only it has uſually one Chap or Seam running down one ſide, parallel to the length of it, * *d.* 40. 43. 44.

This, in ſome at leaſt, paſſes on, tho' with a very fine Fiſſure, to the Middle or Axis of the Body.

§ 5. Of the interior Conſtitution of the *Conic Belemnites.*

It appears to conſiſt of a Talky Spar, * *d.* 22. 29. 37.

And is compos'd of ſeveral Conoid Cortices, Cruſts, or Cups including one another, * *d.* 1. 2. 4. † 17. 19. 20. 22. 30. 31. 36. 40. 43. 45.

Thoſe Cruſts are all ſtriated a-croſs; they conſiſting of numerous Fibres, or Filaments, that paſs them generally towards the Axis of the Body, * *d.* 1. 4. 6. 7. 8. 10. 11. 12. 14. 17. 18. 19. 20. 22. 25. 30. 31. 37. 38. 43. 45.

Tho' in ſome the Striæ tend towards a Line placed near one ſide of the Body, * *d.* 17. 19. 20. 21.

Moſt of theſe Bodies have a conic Cavity in the middle. * *d.* 1. 2. 14. 17. 18. 19. 22. *& ſeq.* 37. 38.

This in ſome of them is empty. * *d.* 14. 17.

In others 'tis fill'd with Chalk. * *d.* 2.

—— with Stone of the ſame ſort with that of the Strata in which the Body is found, * *d.* 17. ‡ 17. 22. *&* *ſeq.* 29. 43.

—— with a greyiſh Matter.

—— partly a black ſhining Matter, and partly white Spar, * *d.* 37.

—— with a grey Alum-Mineral, * *d.* 38.

—— with a yellow Braſs-like *Pyrites.* * *d.* 30. 31.

—— with a grey talky Spar, and ſome Admixture of *Pyrites,* * *d.* 31.

—— with a grey talky Spar, * *d.* 29.

—— with a coarſe Spar, * *d.* 26. 27.

—— with a ſemi-pellucid Spar, * *d.* 25.

—— with a white, diaphanous, cryſtalliz'd Spar, * *d,* 19.

This Spar in ſome is divided into ſeveral Joints, or Parts, that are at one end concave, and at the other convex; each gradually leſs than other, ſo as to form a Cone, and terminate in a Point, * *d.* 32.

The ſaid Joints are ſometimes of a harden'd clayey Matter, having in it Flakes of Talc, ſometimes Sparks of a *Pyrites,* and being gilded with a ſhining Armature, * *d.* 32.

Sometimes of a blueiſh ſtoney Matter, * *d.* 29.

A Plate of a *Selenites* wedg'd or included in one of theſe jointed Cones, * *d.* 29.

§ 6. Several Accidents of this Body.

Some of the conic *Belemnitæ* have *Vermiculi Marini,* and other Sea-ſhells, adhering to their Surfaces, * *d.* 14, *&* *ſeq.* 23.

Some of them are crack'd, inflected, diſtorted, and compreſs'd, * *d.* 17, *&* *ſeq.* 38. 44.

Some of them, particularly thoſe found, beat out of the Cliffs, on the Sea-ſhores, have Holes in them like thoſe made in Wood by Worms; and ſeem to be eroded, or ſcooped by *Pholades,* or other like Creatures, * *d.* 7. 41.

Sea-ſhells, Teeth of Fiſhes, and other marine Bodies, found lodg'd in the Strata of Chalk, Clay, Stone, *&c.* along with the *Belemnites.*

C. II. Of the *Belemnites fuſiformis,* * *d.* 34. to 36 x, & 40.

This ſort is leſs than the Conic, * *d.* 34, *&* *ſeq.*

But is ſtriated in the ſame manner, * *d.* 34. 36.

Conſiſts of various Cruſts, * *d.* 36. 40.

And has likewiſe a Seam running parallel to the length of it, * *d.* 34. 40.

Some of theſe are of a grey Colour, * *d.* 34.

Others of the Hue and Complection of Amber; with ſome degree of Diaphaneity, * *d.* 40.

C. III. *Belemnites in Cuſpidem utrinque terminans*, * *d.* 45.

This alſo is compoſed of ſeveral Cruſts ſtriated a-croſs; and is, in Conſtitution, little different from the two precedent Kinds, * *d.* 45.

But none of theſe, that I have hitherto met with, have any *Veſtigia* of the Chap, or Seam, that the two former Kinds have, running length-ways of their Surface.

C. IV. Obſervations and Reflections.

The *Belemnites* is found lodg'd ſometimes in Stone, * *d.* 22, *& ſeq.*

Sometimes in a blue Clay, * *d.* 40.

Sometimes in Chalk, * *d.* 45.

Thoſe Foſſils are of Conſtitution too much differing ever to give birth all to the ſame Body.

Beſides the Matter of the Strata of Chalk, or Clay, and much more of Stone, would not have given way, or made room, after their Compilation, for the Formation of Bodies of the Bulk, to ſay nothing of the Texture, that ſome of theſe are of.

So that the *Belemnitæ* muſt have been form'd before the Strata were compiled.

They are every where found as much independent upon the Strata as the Sea-ſhells, *Pyritæ*, Flints, and all other Nodules are.

For this reaſon, formerly, when I drew up my *Eſſay* towards a Natural Hiſtory of the Earth, I concluded that they were mere ſparry or mineral Nodules; and form'd before the Strata.

The latter of which Propoſitions is certain; and beyond conteſt. And 'tis as certain that nothing appears in the Conſtitution of any of them, that I have yet ever ſeen, but what is evidently of a talky ſparry Conſtitution. But there are ſome of them, *e. gr.* * *d.* 14, *& ſeq.* 23. that have Sea-ſhells, and particularly of the *Vermiculi Marini*, adhering to their Surfaces. Now, tho' it be true that the ſame Accident is ſometimes obſervable in other Nodules that are of irregular and uncertain Figures, and indiſputably of mineral Origin; yet that is very rare: and, upon a cloſer Inſpection and Examination of theſe Bodies, I obſerve that the Shells are affix'd to the Surfaces of them, in ſuch manner as they are wont to the Surfaces of Bodies, lying now on the Sea-ſhores, upon which they live, thrive, and grow. So that I am not without ſome Suſpicions that the Bodies upon which they are ſo affix'd, were form'd and exiſtent before ever the Water of the Deluge came forth upon the Earth; and were of Animal, and not of Mineral Nature, as theſe now appear to be, and as I took them ever to have been. This is certain, many of the teſtaceous and animal Subſtances, then repoſited in the Earth, are ſince diſſolv'd, their Compages deſtroy'd, and ſucceeded by ſparry and other mineral Matter, that at this day is exactly of their Shape and Mien; it filling the Places where they were, and ſo being circumſcrib'd and determin'd termin'd in its Figure by them.——Nay, there are ſome animal Subſtances, that are themſelves alſo ſtill extant, that yet have their Pores and Interſtices ſo ſaturated with mineral Matter, as to appear, to a leſs heedful Obſerver, to be wholly mineral. Of this I have ſome very extraordinary Inſtances among the *Echini Spatagi*; ſome of which are ſo ſaturated with ſparry, and others with flinty Matter. From an almoſt endleſs number of Phænomena, I am ſatisfy'd that at the Deluge, all Foſſils were ſo far diſſolv'd, as to be reduc'd to their ſingle Atoms and Principles; and that no two of theſe remain'd united or coherent. And thoſe Principles, or Particles, in many Minerals, are ſmall and fine infinitely, and beyond Expreſſion. Theſe were capable of being inſinuated into the fineſt Pores of the animal Subſtances; and conſequently of ſo far eclipſing, abſorbing, and diſguiſing the animal Matter, that the Body ſhould appear afterwards to be intirely mineral. And I leave it to further Obſervation and Scrutiny, whether theſe Bodies were not originally Horns, or other like animal Appendages; of which we ſee by the *Aſteriæ*, *Entrochi*, and many more, there are or have been vaſt numbers at the bottom of the Ocean, that never appear upon the Shores †. Another Phænomenon I muſt take notice of; which is, that the *Belemnitæ* ſometimes appear to have been compreſs'd, crack'd, and diſtorted; which is what I do not remember ever once to have obſerv'd in any Foſſil that was not form'd in an animal Mould. But in theſe ‖ there are Inſtances of it; of which there are Accounts in the ſecond Part of this Catalogue.

After all, I cannot conceive how the Body, that was ſucceeded by the *Belemnites*, ſhould be diſſolv'd, and the Shells, adhering to the Surface of it, not be diſſolv'd likewiſe. 'Tis moſt probable that theſe Shells affix'd to the Body at the time of its Coalition and Formation, which happen'd to ſome other Foſſils. *Vide e.* 67. *infra.*

Of the ſucceſſive Formation of the Cruſts of the *Belemnites*, ★ *d.* 43.

Of the Medicinal Properties of the *Belemnites*, ★ *d.* 24.

The Places where the *Belemnites* are found.

Greenhith, ★ *d.* 1. 45.
Northfleet, in *Kent*, ★ 2, *& ſeq.* 45, 46.
Thurnham, *Kent*, ★ *d.* 36.
Croydon, *Surrey*, ★ *d.* 45.
Great Bowden, *Leiceſterſhire*, ★ *d.* 16. ★ *d.* 32.
Aſhley, *Northamptonſhire*, * *d.* 32 x. 33.
Clipſton, *Northamptonſhire*, * *d.* 12. 13. ‡17. ⊖17. 20. 28. 29.
Boughton, *Northamptonſhire*, * *d.* 28.

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† Vide *Nat. Hiſt. of the Earth*, 2d *Edit. p.* 25.

‖ *See the ſecond Part of this Catalogue, of the* Extraneous Foſſils, Claſs v. Part 1. Sect. 1. *of the* Echini Spat. h. 27. 32. 33. 40.

Sherburn, Glouceſterſhire, **d.* 24.
Near *Oxford,* **d.* 14. 34.
Hannington, Wiltſhire, **d.* 34 x, *& ſeq.* 42.
Silverton, Devonſhire, **d.* 43.
Whitby, Yorkſhire, **d.* 30. 37.
Spitton, Yorkſhire, **d.* 9. 10. 11. 18. 40.
Scarborough, Yorkſhire, **d.* 8. 41.
Sheppey Iſland, **d.* 6.
Einſham, Oxfordſhire, **d.* 15.
Yanworth, Glouceſterſhire, **d*†. 15. **d.* x. 17.
Barrington, Oxfordſhire, **d.* x. 15.
Farmington, Glouceſterſhire, **d.* 17.
Stowell, Glouceſterſhire, **d.* 19.
Birlip-Hill, Glouceſterſhire, **d.* 22.
Norleach, Glouceſterſhire, **d.* 25.
Colne-Allens, Glouceſterſhire, **d.* 26.
Stunsfield, Oxfordſhire, **d.* 34. **d.* 35.

CLASS IV. PART VI.

Belemnites.

**d.* 1. A *Belemnites* of a light brown Colour, ſomewhat above two Inches long, and $\frac{3}{8}$ of an Inch in Diameter in the middle; from which it leſſens equally towards both Extremes. At one of them it terminates, not tapering and gradually, but ſuddenly, in a Point; at the other 'tis abrupt, and $\frac{1}{4}$ of an Inch over, appearing to conſiſt of three or four Cruſts, ſet one within another, and having in the middle a round Cavity $\frac{1}{8}$ of an Inch a-croſs. Found in the great Chalk-Pit at *Greenhithe,* in *Kent.*

* *d.* 2. Another, little different, only the Colour is ſomewhat lighter; and it ſeems to be made up of ſix or ſeven thinner Cruſts. It has a Cavity at the obtuſe End, as the other has, which in this is full of Chalk. In a Chalk-pit near *Northfleet, Kent.*

* *d.* 3. Another, leſs; from the ſame Chalk-pit.

* *d.* 4. Another, ſtill from the ſame Chalk-pit. This is broken, and appears to be made up of ſeveral Fibres, tranſverſely paſſing thro' all the Cruſts, to the Axis of the Body.

**d.* 5. Another, with its Outſide very rough, as if eroded; the former, and indeed all theſe Bodies having their Surfaces uſually ſmooth. From the ſame Chalk-pit.

**d.* 6. A Piece of a larger, much rougher than the former, having in its Sides ſome Holes made, and thoſe ſo great, as to reach almoſt to the Axis of the Body. This too is ſtriated from the Surface to the Axis. Where ſmooth, 'tis ſemi-pellucid, and of a yellow Caſt, ſomewhat deeper than that of the Piped-waxen-

Vein, and glitters ſlightly not unlike a dusky *Selenites*. Found on the Shores of *Sheppey-Iſland*.

**d*. 7. Another, having ſeveral Holes and Furrows in it, appearing exactly like the Eroſions of Worms in Wood. 'Tis broke at the obtuſe End, and ſtriated from the Surface to the Axis. From the Shores near *Scarborough*, *Yorkſhire*.

**d*. 8. A *Belemnites* very much like that N° 1. only of a darker Colour. 'Tis a little broken in one part, at the obtuſe End; and appears to be ſtriated thro' the Cruſts towards the Axis. Found in a Clay-pit near *Lambeth*.

**d*. 9. Another little different from N° 4. but of a ſadder Colour. Taken out of a blue Clay in a very high Cliff near *Spitton*, *Yorkſhire*. They are found plentifully in that Cliff; but many of them are very brittle, and even friable.

**d*. 10. Another, very ſmall. This is pellucid, and of a pale Amber Colour. The obtuſe end of it is ſmaller, and comes nearer a point, than in any of the former. 'Tis ſtriated, or rather made up of Fibres tending from the Surface to the Axis, as this ſort of Bodies generally are. Found with the precedent in *Spitton-Cliff*.

**d*. 11. Another from the ſame Cliff, and of the ſame Colour, only ſomewhat darker, and ſtriated in like manner. The Point of this is like the Point of that **d*. 1.

**d*. 12. Another, no way different from N° 10. only of a dark Aſh-colour, and not pellucid. In a Quarry Weſt of *Clipſton*, half a Mile from the Town, *Northamptonſhire*.

**d*. 13. Another, little different from N° 3. only of a ſadder Colour. From *Clipſton-Quarry*.

**d*. 14. Another large one of a brown Colour; $5\frac{1}{4}$ Inches long, and its Diameter at the obtuſe end 1 Inch and $\frac{1}{10}$. This is more taper than any of the former, leſſening gradually to a ſharp point. It has a conical Cavity at the obtuſe end $2\frac{1}{2}$ Inches deep, $\frac{9}{10}$ of an Inch over at the top; and conſequently the Cruſt, which is ſingle and ſtriated a-croſs, is about $\frac{1}{10}$ of an Inch thick. There are adhering to it a *Vermiculus Marinus*, and three ſmall Shells of a ſort of Bivalve, found frequently in the Stone-pits about *Oxford*, and ſeeming to be of the Tree Oyſter-kind. There are *Veſtigia* of ſeveral more that have ſtuck to it, but are now broken off and gone. They ſeem to adhere only to its Surface, and not to be incorporated with the Matter of the Stone. Found in a Stone-pit on *Cowley-Common*, near *Oxford*. [There are parts of *Balani* affixed on the foſſil Coralloid, *e*. 67. *infra*.]

**d*. 15. Another, leſs, otherwiſe little different; having likewiſe one of the ſame Bivalves, and two or three *Vermiculi*, ſticking to it. Stone-pit, near *Einſham*, *Oxfordſhire*.

**d*. 15†. A Piece of another, with ſeveral Shells of the *Vermiculi Marini* adhering to the Surface of it. *Sherburn*, *Glouceſterſhire*.

**d*. 15Θ. Another, with two or three like *Vermiculi* upon it. Stone-pit near *Yanworth*, *Glouceſterſhire*.

**d.* 15 x. Another having on it five ſmall *Vermiculi,* twirl'd in ſuch manner as to reſemble a ſort of ſmall *Cochlea Marina. Barrington* great Quarry, near *Burford, Oxfordſhire.*

**d.* 16. A *Belemnites* terminating in a pretty blunt Point, ſemi-pellucid, and ſomewhat reſembling Amber. *Bowden, Leiceſterſhire.*

**d.* 17. Another, with a conical Cavity; and having its Sides which are very thin, ſtriated a-croſs. 'Tis of much the ſame Colour with the former, but not quite ſo pellucid. 'Tis but 1 ¾ Inch in length. Toward the Cone there is a circular Crack in the Stone, at which the Body is bent a little. *Farmington, Glouceſterſhire.*

**d.* 17 x. Another, larger, being 2 ½ Inches long; and having its Cavity fill'd with a brown Sand-Stone. This is crack'd in ſeveral places: much compreſs'd, and diſtorted; in ſuch manner as that it appears to have ſuſtain'd ſome great external Force upon it after its firſt Formation. *Yanworth, Glouceſterſhire.*

**d.* 17 ‡. A Piece of a *Belemnites,* crack'd likewiſe and compreſs'd. 'Tis the larger or obtuſe part of the *Belemnites*; its Cavity being fill'd with a brown Sand-Stone. At the bigger end it conſiſts of one thin Cruſt ſtriated a-croſs; but one ſide being broken lower down, there appears another like Cruſt within it. At the other end, where it is broken diametrically a-croſs, it is made up of four Cruſts, one within another, and ſtriated tranſverſly; which Cruſts are parts of ſo many concave Cones. From *Clipſton-Quarry, Northamptonſhire.*

**d.* 17 ⊖. Another ſmall one from the ſame Quarry, crack'd compreſs'd, and diſtorted.

**d.* 18. A *Belemnites,* little different from N° 16. only not quite ſo pellucid, being of a ſomewhat more dusky Colour. Found in *Spitton-Cliff,* with N° 9.

**d.* 19. A large *Belemnites,* near as big as that N° 14. and much of the ſame Shape. The Apex, or leſſer End of it is broken off, where the *Striæ,* ariſing from the Surface all round, tend, not to the Middle, or Axis of the Body, but to a Line, placed much nearer one ſide of it, being not above ¼ of the Diameter of the Body diſtant from the Surface on that ſide. So that the *Striæ* or Fibres there, are not above one third of the length of thoſe tending to that Line from the oppoſite ſide. The Cruſt at the other end is ſtriated a-croſs; and on one ſide is part of a ſecond Cruſt, within the other, ſtriated in like manner. The reſt of the Cavity is filled up with a white diaphanous cryſtalliz'd Spar. *Stowell, Glouceſterſhire.*

**d.* 20. Another, broken at each end, and of a flattiſh form, all the foregoing being round. It appears at the Breaches at both ends to conſiſt of ſeveral thin Cruſts, one within another, all ſtriated from the Surface towards a Line placed near one ſide of the Body, as in the leſſer end of the former. Found in *Clipſton-Quarry, Northamptonſhire.*

**d.*

**d.*21. Another Piece, broken long-ways, ſo as to ſhew the Line above mention'd in N° 19, & 20. running the whole length of the Body, placed, not in the middle, but pretty near one ſide of it. *Ibid.*

⋆*d.*22. Another, the Cavity of which is fill'd with a grey ſort of Sand-Stone, of the ſame ſort with that of the Stratum, in which the Body was originally lodg'd. This is made up of ſeveral thin Cruſts, ſtriated a-croſs, towards the middle of it: On one ſide it appears as if worn or ground away, ſo that ſeveral of the Cruſts are viſible one within another for the whole length of the Stone. It happens in two or three places to be broken croſs the Grain of the *Striæ*, and appears there flaky, not unlike a ſort of Talky Spar. I found in the ſame Stratum ſeveral whoſe Cavities were fill'd with the ſame ſort of Stone. *Birlip-Hill, Glouceſterſhire.*

⋆*d.*23. A Maſs of the Stone of the Stratum above mention'd, with a Piece of a *Belemnites* in it, broken ſo as to ſhew a Cone of the ſame ſort of Stone lodg'd in its Cavity. There is on the ſame Stone an Impreſs of part of a ſort of Bivalve.

⋆*d.*24. Another Maſs of a greyiſh Stone mix'd with a Spar, and having in it numerous Fragments of Sea-ſhells. There is lodg'd in it a Piece of a *Belemnites*, whoſe Cavity is fill'd with the ſame ſort of Stone. From a Stratum of Stone in Sir *Ralph Dutton*'s Home-Park at *Sherburn* in *Glouceſterſhire*. In this Country the Farriers uſe the *Belemnites*, finely-powder'd, in watery Affections of the Eyes of Horſes. The common Pharmacologiſts recommend it inwardly in Nephritic Caſes; and doubtleſs it has much the ſame Properties with Spar. *Vide infra f.*21. *Cl.p.*2.

⋆*d.*25. A *Belemnites*, broken ſo as to ſhew the interior Texture of it. 'Tis ſtriated at the ſmall end towards the Axis of the Stone. Its conical Cavity is fill'd up with a white ſemi-pellucid Spar. This Spar conſiſts of ſeveral Joints, each about $\frac{1}{20}$ of an Inch in thickneſs. On the broader Surface they are concave; on the other convex; ſo as they fit and joint cloſe to each other, growing ſtill leſs and leſs, till they end with a very ſmall one at the Point of the Cone. *Norleach, Glouceſterſhire.*

⋆*d.*26. Another, broken ſo as to ſhew a like articulated Cone, but of a coarſer Spar. *Coln-Allins, Glouceſterſhire.*

⋆*d.*27. Five Pieces of other like jointed Cones, taken out of the Cavities of *Belemnitæ*. From ------ *Northamptonſhire.*

⋆*d.*28. Three other like Pieces; the two larger found in the blue Clay got out of the Canal of the Earl of *Montague* at *Boughton, Northamptonſhire*: the leaſt from *Clipſton-Quarry*. Mr. *Morton.*

⋆*d.*29. A Piece of a *Belemnites*. The conic Cavity, at one end, is fill'd with a grey Talky Spar, at the other with a blueiſh Stone, in which is infix'd a ſmall Plate of *Selenites*. *Clipſton, Northamptonſhire.*

* *d.* 30. Another, in which the Cone, filling the conic Cavity, conſiſts of Joints of a yellow Braſs-like *Pyrites*. The *Belemnites* is of a blackiſh Colour, and a Conick Shape, and is ſtriated from the Surface towards the Middle. Found lodg'd in the Alum-Stone at *Whitby, Yorkſhire.*

* *d.* 31. Another out of the Stone too, of the ſame Shape and Colour, and ſtriated in like manner, but appearing to be made up of ſeveral thin Cruſts ſet one within another, and ſurrounding the Cone. The Joints of the Cone, filling the Cavity, are of a grey Talky Spar, with a ſlight Admixture of *Pyrites.*

* *d.* 32. Six Joints each gradually leſs than the other. The biggeſt is very large, being about 1 $\frac{1}{2}$ Inch in Diameter. They approach an oval Figure, and conſiſt of a hard grey Clay, with ſome very ſmall ſhining Sparks, ſeeming to be of Talc. Both their concave and convex Surfaces are very polite, and in ſome Places have a ſhining Armature upon 'em, like that frequently obſervable on *Cornua Ammonis* and other Shells that have lain in a vitriolic Earth: and in ſome Places there appears a little quantity of a *Pyrites* adhering to them. At *Great-Bowden* in *Leiceſterſhire*, Mr. *Bland.*

* *d.* 32 x. Several Joints, near 20, of much the ſame Size with the foregoing. *Aſhley, Northamptonſhire.* Mr. *Sawyer.*

* *d.* 33. A ſingle Joint of much the like Size and Shape with *d.* 32. ſent alſo by the ſame Perſon, Mr. *Bland*, from the ſame Place, *Bowden.* The Clay of it is of a like ſort with that of the former; the convex ſide is polite, and plainly appears to be covered with a thin Cruſt about $\frac{1}{20}$ of an Inch thick. What theſe Bodies are, is not eaſy to determine; particularly whether Joints of the Cone contain'd in ſome very large *Belemnites.* Mr. *Bland* informs me he has ſeen Syſtems of theſe of a Conical Figure, and ending in a ſmall Joint or Point; but he never ſaw any part of a *Belemnites* adhering to 'em. Be that as it will, they are found elſewhere, filling the Conic Cavities of *Belemnitæ. Conf.* * *d.* 25. *ſupra, &* * *d.* 39. *infra.*

* *d.* 34. A ſmall *Belemnites*, differing in Shape from any of the former. 'Tis 1 $\frac{1}{2}$ Inch in Length, and $\frac{3}{10}$ of an Inch in Diameter, where thickeſt. It terminates at one End in a bluntiſh Point, from whence it gradually ſwells to about $\frac{1}{3}$ part of the Length, thence gradually leſſening for $\frac{1}{3}$ more, till its Diameter be little more than $\frac{1}{10}$ of an Inch, which thickneſs it holds to the other End, only ſwelling a little at the very Extremity where it is hollow, but the Cruſt very thin. 'Tis a little broken in one part, and appears to be ſtriated toward an Axis, in the ſame manner as the reſt. In the thicker part 'tis of a dark grey Colour; in the thinner of a ſomewhat lighter. There is a ſmall Chap or Seam running the whole Length of it, but is moſt conſpicuous at the thinner End. This is of that ſort which *J. Bauhinus* in his Treatiſe *de Fonte Bollenſi*, p. 34. calls *Belemnites fuſi inſtar ventre craſſiore, in acumen utrinq; deſinente.* Found in a Stone-Pit at *Stuns-*

field in *Oxfordſhire.* This Species of *Belemnites* is alſo found about *Zurich* in *Switzerland. J. Scheuchzer Spec. Lithogr. Helvet.* p. 25.

* *d.* 34 x. Another of the ſame kind, found along with * *d.* 42.

* *d.* 35. Another, in nothing different from * *d.* 34. only ſomewhat leſs, and found in the ſame Place. * *d.* 9. 10. 12. *ſupra* are of this Species.

* *d.* 36. A Piece of a larger of the ſame ſort. In the thickeſt part 'tis $\frac{7}{20}$ of an Inch in Diameter. 'Tis broke about the middle, where it is ſolid throughout, and ſtriated from the Surface acroſs two thin Cruſts to the Axis. From ſtill the ſame Stone-Pit.

* *d.* 36 x. Another, dug up in a Tile Clay-Pit, near *Thurnham*, 3 Miles from *Maidſtone* in *Kent.*

* *d.* 37. A Conic *Belemnites*, near 4 Inches in length. 'Tis rough on one Side, and looks as if grated and worn away; gliſtering there likewiſe in ſmall Spangles not unlike one of the *Micæ.* Being broke at the bigger End, it diſcovers itſelf to be compos'd of tranſverſe Fibres. The Conical Cavity is filled partly with a black ſhining gloſſy Matter, and partly with a white, much reſembling a coarſe Spar. In *Whitby* Alum-Mines, *Yorkſhire.*

* *d.* 38. Another of much the ſame Size, Shape and Texture. This is flat at the bigger End, and crack'd as if compreſs'd by ſome external Force, though the Pariæ or Sides are not brought ſo near together but that ſome of the Conic Cavity remains, and is filled with the common grey Alum-Mineral. On one part, where broken, the Fibres appear with a ſhining braſſy Gloſs, like a *Pyrites*, but it ſeems to be only ſuperficial. From the ſame Mines.

* *d.* 39. A Piece, broke off from the bigger End of another, of like Size. The Conic Cavity of this is filled with a greyiſh Matter made up of ſeveral Joints as that * *d.* 25. Both the Concave and Convex Surfaces of the Joints are very ſmooth and ſhining. *Whitby* Alum-Mines.

* *d.* 40. A *Belemnites fuſiformis*, about an Inch long, ſomewhat Diaphanous, and of the Colour of Amber. When held up to the light, a Slit or Crack diſcovers itſelf paſſing ſtreight on for the whole length of it. It appears to be compos'd of many very thin Cruſts. Found lodged in a blue Clay in a large Cliff near *Spitton* in *Yorkſhire*, where there are great Numbers of them. This is very firm and hard, but ſome of them are ſo friable that they will crumble betwixt one's Fingers. The Crack abovemention'd is frequent both in this, and the common *Belemnites*, of which there are Inſtances in * *d.* 2. 3. 6. 8. 9. 10. 11. 13. 14. 16. 17. 18. 22. In ſeveral of theſe the Crack is viſible from the Axis of the Stone, quite to the Surface. The Seam, or Sulcus, in the *Belemnites* * *d.* 43. *infra.* and the *fuſiformes* * 34 *ſupr. & ſeq.* is wholly external, ſo far as appears, and quite different from theſe Cracks.

* *d*. 41. A *Belemnites* from *Scarborough* Shore, worn and fretted by the agitation of the Sea, and having in its Surface ſeveral ſmall oblong Cavities, appearing as if corroded by Worms.

* *d*. 42. A *Belemnites*, little different from that * *d*. 14. Out of a Clay-Pit at *Hannington* in *Wiltſhire*, where they are found in great numbers.

* *d*. 43. Part of a *Belemnites* broken to ſhew the interior Texture of it. The Fibres or Striæ tend all to the Axis, about which the Circles appear very plain; and at one End is a brown ſtoney Matter in the middle, which is ſurrounded with a Circle of white ſparry Matter, and that with a Circle of blackiſh horney Matter. This ſhews the Manner of the Formation of the Body, and the ſucceſſive Application of the Conſtituent Matter. There's a Seam or Sulcus runs down one Side of this Body for the whole Length of it. *Silverton*, *Devonſhire*. There were ſeveral of them; all of this, which is the common ſort, conic, and terminating at one End in a Point.

* *d*. 44. Parts of two more, of the ſame ſort, from the ſame Place, crack'd and inflected, but cemented at the Cracks, and held together by interpoſition of a ſtoney Cement.

* *d*. 45. Four *Belemnitæ*, each an Inch and ¾ in Length, and ¼ of an Inch in Diameter, where thickeſt, which is not in the Middle, but rather towards one End. That End terminates in a Point like that of * *d*. 1.2.3. and of thoſe * *d*. 46. which makes me ſuſpect all thoſe to be of the ſame ſort with theſe, tho' that cannot be aſcertain'd, becauſe in all thoſe one End is broken off. But they are of the ſame Colour and Conſtitution with theſe, and were found in the ſame Places, *viz*. the Chalk-Pits of *Greenhythe* and *North-fleet*, *Kent*. What is obſervable in theſe, is, that they terminate at the oppoſite End likewiſe in a Point, little different from that of the other End, only the Body is ſmooth on that End, and on this 'tis ſet with Ridges round the Point. As to the interior Conſtitution of theſe, they are ſtriated from the Axis to the Center, and are compoſed of ſeveral Cruſts, including one another like the other common *Belemnitæ*, which appear to be all broken, and we find only Pieces of them. 'Tis not improbable but, when they are whole, they terminate in a Point at each End as theſe do. I obſerved *Belemnitæ* of this Species in the great Chalk-Pit, on the S. E. of *Croydon*, *Surrey*.

* *d*. 46. Two *Belemnitæ* like thoſe * *d*. 1. & 2. but bigger. Found in a Chalk-Pit near *Northfleet*, *Kent*.

Introduction *to* CLASS V.

Of the Marine Corals.

PART 1. Of the Nature and Conſtitution of the marine Corals.

C. 1. The Specific Gravity of the ſeveral kinds of marine Corals.
- ——— of the *Antipathes*, or Black Coral.
- ——— of the red Coral.
- ——— of the white Coral.
- ——— of the ramoſe *Porus*.
- ——— of the corallin *Aſtroites*.
- ——— of the corallin *Mycetites*.

C. 2. Chymical Tryals of the ſeveral kinds of marine Corals.

C. 3. Of the Conſtituent Matter of the marine Corals.

Cryſtal Spar, is a conſtant and certain Ingredient of the marine Corals, and there is ſome ſmall quantity of it in all of them.

The different Conſtitutions, Forms and Colours, of the ſeveral kinds of Corals, are owing to the Admixture and Incorporating of various ſorts of earthy, ſtoney and mineral Matter, with the Cryſtallin, in the Formation of them.

There is, beſides the mineral, an Admixture of a fibrous Vegetable Matter, more or leſs, in the Compoſition of moſt marine Corals.

APPEND. The various ſubmarine Shrubs are of a corneous, or ligneous Conſtitution, conſiſting chiefly of a fibrous Matter: Otherwiſe they carry externally ſomewhat of the Face and Appearance of the Corallin Shrubs. They are alſo affix'd, like them, to the Stones or other Bodies upon which they grow, by a Pedicle: and have not Roots, as the Shrubs at Land have.

C. 4. A Collation of the marine Corals, with the ſeveral kinds of Spar.

The Conſtituent Matter of Coral and of Spar compared.

The interior Texture of Coral and Spar compared.

The Colour of the ſeveral ſorts of Coral and Spar compared.

PART 2. Of the Forms of the marine Corals, and a Collation of them with the various Forms of Spar, and of ſome other Minerals.

C. 1. Of the Corallin and Sparry *Aſtroitæ*.

C. 2. Of the Corallin, Sparry and Mineral *Mycetitæ*, e. 47. 48.

C. 3. The fiſtuloſe Sparry *Stalactitæ* compared with the Corallin *Pori*.

APPEND. Of the native Iron *Stalactitæ*; and the Bruſh-Iron-Ore: o. 22. *& ſeq.* Of the florid Iron-Ore. o. 28. 85. *& ſeq.*

C. 4. The florid and ramoſe Corals compared with the florid and ramoſe Spars that are form'd by the meer Action of the Water in the perpendicular Fiſſures of the Strata. See the Spars, N° *f.* 44. 68. 69.* 83.

APPEND. Of the Capillary, and Arboreſcent Silver, and the Arboreſcent-Iron. o. 85. found in the Metallic Veins and Fiſſures.

C. 5. Of a very elegant Spar found in the perpendicular Fiſſures of the Lead-Mines of *Arkendale*, that very nearly approaches the Shape of *Erica* or Heath.

PART 3. Of the Manner and Poſture in which the Marine Corals grow, and are affix'd to the Rocks.

C. 1. Of thoſe that are found erect.

C. 2. Of thoſe that are protended horizontally.

C. 3. Of thoſe that are found hanging down from the Jets of the Rocks, like the Sparry *Stalactitæ*, in which manner the far greateſt Part of Corals are found. *Conf. Raij Hiſt. Plant. Tom.* 1. *p.* 61. *d.* and Mr. *Willoughby*'s Voyage thorough *Spain. p.* 466.

PART 4. Inſtances of ſeveral other Bodies that reſemble ſome kinds of Corals in Figure; and may ſerve to illuſtrate and clear up the Natural Hiſtory of them.

C. 1. Of the Silver-Tree of the Alchymiſts, and other like Concretions of Metallic and Mineral Bodies in the Menſtrua wherein they had been diſſolved. *Conf. Epiſt. D. P. Guiſony ad P. Boccon. Recherches & Obſ. Nat. p.* 19. *Conf. Chymie de Lemery, Part* 1. *c.* 2. *p.* 104. *Mem. de l'Acad. des Sciences*, 1692. p. 145.

C. 2. Of the Stellar Shootings upon the Surface of the Regulus of Antimony, as it becomes cool, after Fuſion.

C. 3. Of the Ramoſe and Stellar Sketches upon the Mocho-Stones.

C. 4. Of the *Dendritæ*, or Delineations of Trees, Shrubs, and ramoſe Figures, made by mineral Steams, on Flints, Marble, Stone, Slate, and various other Foſſils. *Vide Mantiſſ.* 1. *infr.*

C. 5. Of the ramoſe Concretions of the volatile Salts, obſervable upon the Glaſs of the Receiver, whilſt the Spirits of Vipers, Harts-horn, and other like Spirits are drawn; eſpecially if the Operation be gentle and ſlow.

C. 6. Of the fuliginous Matter form'd, by the Drift of the Air, into the Shape of a Species of marine Lichen, in Creeks of Chimneys, Stoves, Forges and Furnaces, where there are Fires kept for a conſiderabte Time, and much Fuel ſpent.

APPEND. Of fuliginous tuberous Bodies reſembling Mulberrys, form'd accidentally in great Coffee-Houſes. *Addit. Eng. Foſſ.* N° 300.

C. 7. Of Snow affix'd, in ramoſe Figures, on Trees and other ſtable Bodies, by means of the Wind, or Drift of the Air.

C. 8. Of the various ſtellar Figures of Snow. *Conf. Mem. de l'Acad. des Sciences. An.* 1692. *p.* 32.

C. 9. Of the Ramoſe and ſtellar Figures of the *Pruina*, commonly obſervable on the Outſide of the Glaſs of Windows, during Hore-Froſts.

C. 10. Of the Ramoſe, Stellar and other Figures, obſervable in Water, and other Liquors, frozen.

C. 11. Of the Ramoſe Figures form'd by a ſudden Parting of the Stones uſed in grinding and preparing of Crabs-Eyes, Pearl, Coral, and other like Bodies for Medical Uſe.

C. 12. Of the Ramoſe Figures form'd by the terreſtrial Matter left, upon the Evaporation of a ſmall Quantity of muddy Water diffuſed, very thin, upon any polite Surface.

PART 5. Of the Origin and Formation of the Marine Corals.

C. 1. The Fund and Source of the Corallin Matter.

The Earth is the Promptuary of the Corallin Matter, it being originally derived from the Rocks, the Cliffs, the Shores and Shallows. *

It is diſtributed and lodged in the Earth with great uncertainty, ſome Shores abounding with it, and others having little or none.

The Corallin Matter is likewiſe very various, that repoſited in one Cliff being frequently unlike that of another.

Nay, that in the ſame Cliff is ſometimes very various; and that which is lodg'd in the upper Parts, differs in Kind, in Conſtitution, in Colour, and in Mixtures, from that which is below.

C. 2. Of the Agent that educes forth the Corallin Matter, diſtributes and diſpoſes of it.

This is the Water of the Sea which waſhes and drains it out of its Fund, aſſumes it up into itſelf, conveys it to the Place of its Formation, and depoſits it there.

At ſuch time as the Sea is agitated, and in Emotion, it takes up into itſelf Terreſtrial Matter of all kinds, and in particular the Corallin Matter, depoſiting and letting it fall again, as it becomes more quiet and calm.

The Promontories and Jets of the Shores being chiefly expoſed to the Action of the Sea and Storms, the greater Part of the Corallin Matter is, by that means, beaten off from them, and is again precipitated, and the Corals form'd out of it in Creeks, Bays, the Bottoms of the deeper Seas, and ſuch other Parts as are quiet, ſtill, and ſhelter'd from thoſe Emotions.

In the greater and more violent Storms, the Sea being forced and caſt up to the higher Parts of the Rocks and Cliffs,

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* *The Bottom of the Sea, at greater Depths, being not affected, or Earthy Matter raiſed from it, in the moſt boiſterous Storms.* Vide Nat. Hiſt. of the Earth, 2d Edit. p. 25. 26.

draws thence frequently Matter very different from that which is repoſited in the lower Parts of them; which is only what it was wont to draw forth during Tides, and the leſſer and more common Agitations.

The Number and the Bigneſs of the Corals on any Shores, is in Proportion to the Quantity of the Corallin Matter thereabouts, and to the Intenſeneſs and Agitations of the Seas.

C. 3. Of the Modulation and Compoſure of the various Corallin Bodies.

When the Sea-Water, charg'd and impregnated with the Corallin Particles, becomes, after Storms and Emotions, again calm and quiet, it lets fall thoſe Particles, depoſiting and affixing them upon the Rocks, Stones, Shells, Sea-Shrubs, the Corals before extant, and ſuch other ſtable Bodies that happen to be near and preſent.

This it has done in all Ages, does at this Day, and will continue to do ſo as long as the Sea ſhall continue to work and beat off Matter from the Cliffs and Shores, to remove and tranſpoſe it from Place to Place.

The Coral found affix'd and growing upon wreck'd Ships, loſt Anchors, and various other artificial Bodies, that are daily dragg'd up out of the Sea, affords a Demonſtration that Coral continues to be form'd to this Day, and ſhews likewiſe in what Quantity and Proportion it is produced.

Where the Corallin Matter, in the ſame Cliff, is chiefly uniform and of the ſame kind, the Corals form'd out of it are ſo too. Where 'tis various, they vary as much, and there are Bodies of different Tenor and Complexion, found together in the ſame place. Nay where it ſo happens that the Matter repoſited in the upper Parts of the Cliffs differs from that below, and is not drawn forth commonly as that is, but only in the greater Storms, when the Sea is caſt up to thoſe Heights, the Corallin Bodies form'd in thoſe Parts are variegated. Sometimes a diſtinct Sprig of Red is form'd on a Shrub of white Coral, or a Cruſt of Red caſt upon a Sprig of White, with ſeveral other like Varieties.

The Corallin Matter is found either, 1°, only ſimply precipitated in likeneſs of a Sediment; or 2°, concreted upon Stones, Shells, and Sea-Shrubs, after the manner of an Incruſtation; or elſe 3°, it is form'd into regular and obſervable Figures, ſuch as are the Corallin Shrubs, the Pori, Aſtroitæ, and Mycetitæ.

The firſt ſort nearly approaches the Plates of Spar, found concreted upon the Stones of the Sides of the Perpendicular Fiſſures of the Strata. *vid.* Claſs vi. Part iii. § 1.

The ſecond ſort, or the Corallin Incruſtations are, in all reſpects, like the Incruſtations of ſome ſorts of Spar upon Bodies in the Sources of Springs and Rivulets, there being none the leaſt difference betwixt them either in the Nature of the Matter of each, the Colour of it, or in its Texture and Diſpoſition. *Vid. Cl.* vi. *Part* 1.

As theſe two ſorts of Coral agree exactly with the plated and incruſted Spar in Conſtitution, ſo do they likewiſe in the Proceſs of their Formation. *Vid. Cl.* vi.

The Corals of the third Rank are generally compoſed of a Matter much finer than that of the two former. The Parts are alſo more cloſe, firm and compact: nor are theſe of a Conſtitution near ſo ſimple as thoſe are, but ſhew throughout ſomething more regular and obſervable, as well in their interior Texture as in their external Figure.

As has been noted of the two former, ſo there are Spars that both in Texture and Figure, very nearly reſemble the Corals of this Rank: and not only Spars, but ſeveral other Mineral and Metallic Bodies.

Of this, to paſs by all the reſt, the Heath-like Spar and the Arboreſcent Iron-Ore, o. 85. and the Arboreſcent Silver are illuſtrious Inſtances. Theſe carry not only a Reſemblance of ſome of the Ramoſe Corals, but have ſomething in their Frame and Shape, as curious and artful as any of them all.

So likewiſe the flinty and ſparry *Aſtroitæ* are, in all reſpects, as remarkable and extraordinary as the marine.

And there are *Pyritæ* that agree exactly both in their outward Shape, and their interior Conſtitution, with the Corallin *Mycetitæ*. *Vid. e.* 47.48. *infra.*

Other *Pyritæ* there are of the very ſame Figure, Texture and Compages with the *Aſtroites corallinus undulatus* of *P. Boccone. Recherches & Obſ. Nat.* p. 141. which is indeed the moſt admirable of any in all the whole Tribe of Marine Corals. *Vid. h.* 20.32.41.

As theſe Bodies, both Foſſil and Marine, agree in their Texture and Compoſition, as well internal as external; ſo do they likewiſe in the whole Series, Proceſs and Method of their Formation.

The conſtituent Particles of both are originally derived from the Earth, by the Motion of Water; and are by little and little precipitated again, upon the Ceſſation of that Motion.

And for the Structure of both the Mineral and Corallin Bodies, 'tis merely the Reſult, partly of the Figure and Diſpoſition * of the Particles, of which the ſeveral ſorts of thoſe Bodies are compoſed: and partly of the Motion and Modulation of the Parts of the Water, wherein the ſeparate Particles were ſuſtained.

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* *Which likewiſe is the Caſe of the Ramoſe, Fuliginous, Snowy and Pruinoſe Bodies; with this only Difference, that the Air or Atmoſphere was the Vehicle of the ſeparate Corpuſcles of theſe, as the Water was of thoſe.*

The uliginous lacteous Matter, taken notice of by that diligent and ingenious Botaniſt *P. Boccone* †, in the Coral Fiſhings upon the Coaſt of *Italy*, was only a Collection of the Corallin Particles thus ſuſtained in the Sea Water, hovering about and applying it ſelf to the Corallin Shrubs and Pori, for their Growth and Enlargement. The Acrimony, he obſerved in taſting of it, aroſe from an Admixture of the Sea-Salt; which, in Bodies taken forth of the Sea, is not to be avoided. Indeed ſome Tryals I have made, have taught me that 'tis not excluded even from the Corallin Bodies themſelves, there being ſome admixture of it incorporated with the Corallin Matter in their Conſtitution.

This is what ſome Writers, that are very fancyful, but not over happy in their Fancies and Opinions, call the Seed of Coral ‡. And it muſt be allow'd in favour of their Notion, that this is the very Matter out of which the Corals are raiſed and compoſed, how little Analogy ſoever it may carry to Seed.

And this || likewiſe was, I ſuppoſe, what run in the Head of a late Writer of Natural Hiſtory, (who 'tis agreed on all hands, is not wont to have the moſt lucky Hits of any Man living, in the Conduct of his Thoughts) when he diverted himſelf ſo much with the Speculation of the *Seed* of *Coral*; and, as for more ſureneſs he repeats it, the *Sperme* of *Coral*, which he imagined he had ſo *often ſeen*. Only he quite miſtook the matter, and unfortunately lit upon what was as foreign to it as well could be, what has nothing of a Corallin Nature in it, nor any the leaſt Concern in the Formation of Coral. For that *pellucid* gelatinous * Subſtance, which he pitches upon with ſo great Reliance and Poſitiveneſs ††, is chiefly of Animal Conſtitution, and no other than an Excrement caſt off from the numerous Shoals of Fiſh that inhabit the Main. This is flung upon ſome Coaſts ||| in far greater Plenty than others by the Drift and Bearing in of the Sea upon

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† *Recherches & Obſervat. Nat. l.* 2. *p.* 8. *As alſo S. Ceſtoni. Mem. de l'Acad. des Sciences.* 1700. *p.* 35.

‡ *As others do the ſeparate looſe Metallic and Mineral Corpuſcles, brought by the Water into the Veins, for the Compilation of the Ore there, the Seeds of Metals and Minerals. See* Nat. Hiſt. of the Earth, 2*d Edit. p.* 216. 217.

|| *As alſo what Dr.* Tournefort *has noted about this Subſtance. Mem. de l'Acad. des Sciences* 1700. *p.* 29. *&* 35.

* *For ſuch it is, and not* mucilaginous, *as he ſtiles it.*

†† *Lithophyta—è Semine ortum habent—eorum Sperma perſæpe vidi,--mucilaginoſum, cryſtalli inſtar pellucidum, ejuſdem cum Lapidibus figuræ, &c.* D. Sloan ap. J. Rajum, in Hiſt. Plant. To. 3. p. 5.

||| *As I remember one Sort of it is called* Sea-blubber *in ſome parts of* England.

them. 'Tis indeed true there are ſometimes found Corallin Particles implicated in this; but that is merely accidental, and Fragments of Shells, Sand, Ouze, and the other Recrements of the Sea, are much more commonly obſerved to be intangled in it. At ſuch time as the Sea is in any unuſual Emotion, this floats; when that is calm, it ſinks to the Bottom, and alights upon the Shells, Flints, and all other Bodies there promiſcuouſly. Amongſt the reſt, if there be Coral, it frequently happens to ſettle down upon that, and being of a Diſpoſition very flexible, it readily plies and conforms itſelf to the Surface of the Coral, and ſo receives and aſſumes the *Figure* of it. This was what chiefly amuſed and miſled this Writer; which yet is no more than what it does indifferently to all the Bodies it chances to light upon, and he might, with equal Reaſon, have concluded that it was the Seed of the Shells, the Flints, and the other Bodies that 'tis much more commonly found ſhaped to, and lodg'd upon, as of the Coral. But nothing more need be offer'd to evince upon how ſlight a Foundation this Notion ſtands, than that 'tis certain Matter of Fact that there are Corals found in great Plenty and Variety in Places, where little or none of this gelatinous Subſtance, which he has pitch'd upon for the Origin and Rudiments of all Corals, ever appears; and it occurs frequently and in abundance, in Seas where not ſo much as one ſingle Sprig of Coral is any where to be met with.

APPEND. 1. *The Effects of great Storms upon Coral.*

Thoſe Creeks, Bays, and other Parts of the Sea where Corals are form'd, tho' generally calm, and free from Diſturbance, at ſome Times, and particularly when Hurricanes happen, and Storms that are more than uſually Violent, are put into Emotions ſo great as to break and tear up the Coral again, and to daſh and beat to pieces the Bodies that were form'd in the Calms and the Intervals of thoſe Commotions.

APPEND. 2. *Of the Coral Fiſhery.*

The chief Place for the Coral-Fiſhery is upon the Coaſts of *Sardinia* and *Corſica:* the next upon the North Coaſt of *Sicily:* then upon the Coaſts of *Barbary*, near *Tunis:* towards the Iſle of *Tabarca*; upon the Coaſts of *Catalonia*, chiefly at *Catache*, where the Coral is of the deepeſt Red, and ſo, the fineſt, of any Part of the World, but 'tis ſmall, and frequently eroded and perforated by Worms. 'Tis alſo found under *Monte Nero*, and indeed upon the whole Coaſt near *Leghorn*; tho' 'tis there alſo ſmall, and therefore not ſo much valued. They drag up Black-Coral, and *Fiſtularia purp. Fer. Imperati*, ſometimes, with the Red; and alſo the White that is firm and polite: and of that which the *Peſcadori* call *Ravano*, which is the white Porus of ſeveral Species, which they ſlight and fling away.

Append. 3. *Experiments of the Nature and Conſtitution of red Coral.*

A Pound of red Coral being powder'd and diſtill'd, *per ſe, in Arena*, I found betwixt 20 and 30 *gr.* of a fetid Oil, of a deep red Colour in the Neck of the Retort. Beſides the Oil, there came over into the Receiver, a Phlegma, attended with a volatile Acid. This Acid, by Digeſtion, was reduc'd to a volatile Salt, differing no other ways from that of Amber, than in its wanting of the ſlight bituminous Flavour which that has. The Oil, like other fætid Oils, diſſolv'd in Spirit of Wine. It approach'd the Nature of the vegetable Oyls, but the moſt nearly that of Tartar, in Smell, Conſiſtence, and all other Reſpects. This ſhews there is ſomething of a Vegetable Nature in red Coral: but probably not in ſuch Proportion to the cryſtallin or ſtoney, as to have held that together, and ſecur'd it from Diſſolution at the Time of the Deluge, when all other ſtoney and mineral Bodies were diſſolv'd.

CLASS V.

Foſſil Corals, and Coralloid Bodies.

The Claſſical Diſtribution of theſe Bodies.

Part 1. Coralloid Bodies that are ramoſe or branch'd.
  Sect. 1. The branch'd Coralloid Bodies that have the Surface ſmooth.
  2. Thoſe that have the Surface reticulated.
  3. Thoſe that have the Surface ſtarr'd.
  4. Thoſe that have Striæ paſſing from the Surface to the Axis.

Part 2. Coralloid Bodies that are of a cylindric Shape.
  Sect. 1. The Cylindric Coralloid Bodies that are compoſed of Plates, ſet lengthways of the Body, and paſſing from the Surface to the Axis of it.
  2. Thoſe that are tubular, but intercepted at certain Intervals by Diaphragms, or tranſverſe Plates.

Part 3. Coralloid Bodies oblong, and in Shape of Columns with five Sides.
  Sect. 1. The Pentaedrous Columnar Coralloid Bodies that are compos'd of Plates ſet lengthways of the Body, and paſſing from the Surface to the Axis of it.
  2. Thoſe that are intercepted, at certain Intervals, by Diaphragms, or tranſverſe Plates.

PART 4. *Mycetitæ,* or Coralloid Bodies in Shape of Muſhrooms.
Sect. 1. The *Mycetitæ* that are of a Conic Figure.
2. The *Mycetitæ* that are of a Diſcoid or flat Figure.

PART 5. The *Aſtroitæ*, or ſtarred Coralloid Bodies.
Sect. 1. The *Aſtroitæ*, that have the Stars prominent, or raiſ'd.
2. Thoſe that have the Stars delineated *in Plano.*
3. Thoſe that have the Stars depreſs'd.
4. Thoſe that are perforated or hollow'd.

EXTRACT.

C. 1. The Names given to ſome of the Foſſil Corals.

Shrubby or branched Corals, ſome white and others grey. *e.* 1.
Corallium nigrum, S. Antipathes. J. B. C. P. *e.* 2.
Porus Coralloides, very beautiful, perfect, and as to its Texture little different from the marine ; lodg'd in Black Marble. x *b.* 62.
Tubularia Fer. Imperati. e. 4.
Stelechites. e. 13.
Junci Lapidei. e. 22x. [Theſe are found in an erect Poſture: as alſo the *Helsfield* Cylindrick Coralloides. *e.* 17. *e.* 18.
Mycetitæ Coralloides, or Muſhroom-Stones. *e.* 47. *& ſeq. e.* 54. 60. 62.
Porpites. e. 68.
Honey-Comb Stone. *e.* 112.
Starr'd Honey-Comb Stone. *e.* 43.
Aſtroites. e. 84. *& ſeq.* 97.
Aſtroites coralloides undulatus, or the Brain-Stone. *e.* 87.

C. 2. The ſeveral Places where the Coralloid Bodies are found.

Greenwich, e. 80. 81.
Croydon, Surrey. e. 12x.
Purfleet. e. 47. *& ſeq.*
Norfleet. e. 65. 67.
Sheppey Iſland. e. 47. 48.
Near *Oxford. e.* 56. 57. 61. 84. *& ſeq.* 107. 110. 114.
Oxfordſhire, &c. *e.* 68.
Bullington-Green, Oxford. e. 117.
Shotover-Hill near *Oxford. e.* 85. 105. 106.
Abbington, Berkſhire. e. 116.
Harborough, Leiceſterſhire. e. 12.
From . . . . *Wiltſhire. e.* 41. 42.
Broadwell, Glouceſterſhire. e. 74.
Sherburn, Glouceſterſhire. e. 14. 83. 96. 88. 104.
Yanworth-Fields, Glouceſterſhire. e. 86. 98.
Wheatland's-Mill, Glouceſterſhire. e. 54. 87. 91.
Stowell, Glouceſterſhire. e. 97.
Norleach, Glouceſterſhire. e, 92.

Wakerly, Northamptonſhire. e. 10.
Artleborrow, Northamptonſhire. e. 93. 94. 95.
The Earl of *Dyſert*'s Yard.
Northamptonſhire. e 100. & *ſeq.*
Near *Briſtol.* e. 112.
St. Vincent's Rock. e. 62. 63. 64.
Wales. p. 42. x b. 62.
Landidno, Caernarvanſhire. e. 16.
Brecknockſhire. e. 20 x.
Whitton. e. 74. 75. 109.
Shores near *Skegneſs, Lincolnſhire.* e. 22. 26. 27. 32. 34. 36. & *ſeq.*
Dudley, Staffordſhire, e. 5. & *ſeq.* 15. 44. 45. 46. 55. 60. 82.
Shores near *Sunderland.* e. 3. 23. 24. 31.
Scarborough, Yorkſhire. e. 28. 66. 108.
Outhorn, Yorkſhire. e. 25. 35.
Paul, Yorkſhire. e. 29.
Near *Leeds, Yorkſhire.* e. 40.
Hilden, Yorkſhire. e. 89.
Sedberg, Yorkſhire. e. 4.
Hackneſs-Head, Yorkſhire. e. 19.
- - - - - - - *Cumberland.* 34 †. 90.
Leonard's Caſtle-Abbey, Cumberland. e. 113.
Betwixt *Carliſle* and *Cockermouth.* e. 22 x. 22 †.
How-Lees, Cumberland. e. 51. 52. 53.
Torpenho, Cumberland. e. 13. 50.
Helfield, Cumberland. e. 17. 18.
Kendal, Weſtmorland. e. 20. 50.
Potgill, Weſtmorland. e. 34 x.
Tripland, Weſtmorland. e. 30.
Eynſham, Oxfordſhire. e. 1. 69.
Windruſh, Glouceſterſhire. e. 2.
Mynehead, Somerſetſhire. e. 21.
Shotover-Hill. e. 58.
Aulſeworth, Glouceſterſhire. e. 71. 103.
Riſington, Oxfordſhire. e. 72. 73.
Coln St. Allens, Glouceſterſhire. e. 97.
Farmington, Glouceſterſhire. e. 99.

C. 3. The various Sorts of terreſtrial Matter, in which the Coralloid Bodies are found repoſited.

In a blue Clay, e. 58. 59.
In Chalk, e. 47. & *ſeq.* 65. 67. 80. 81.
In Gravel, e. 13.
In a whitiſh Stone, e. 10.
In a brown Sand-Stone, e. 17. 18. 30. 40. 83. 86.
In a brown Stone of a finer Grain, e. 21. 23. 26. 31. 36. 37.
In a pale brown Stone. e. 19.

In a grey Stone, *e*.3.11.20 x.22.22†.24.25.29.32.34 x.34†. 38.84.85.114.

In an Iron-colour'd Stone, *e*.35.

In a blackiſh Stone, *e*.22.29.

In black Marble, x *b*.62. *e*.27.28.

In a grey ſemi-pellucid Flint, *e*.41.42.43.

In a brown Flint, *e*.20.39.

C. 4. Of the Nature and Conſtitution of the Foſſil Corals.

§. 1. The Specific Gravity of the ſeveral Kinds of Foſſil Corals.

——— of the Antipathes, or black Coral.

——— of the red Coral.

——— of the white Coral.

——— of the ramoſe Porus.

——— of the coralloid Aſtroites.

——— of the coralloid Mycetites.

§ 2. Chymical Tryals of the ſeveral Kinds of Foſſil Corals.

§ 3. Of the conſtituent Matter of the Foſſil Corals.

As in the Marine, ſo likewiſe in the Foſſil Corals, there is conſtantly Cryſtal; but very much leſs in the former than in the latter. *e*.93.

With the Cryſtal alſo are incorporated various ſorts of Earthy, Stoney, and Mineral Matter; to which the Foſſil Corals owe the Difference in their Conſtitutions, Forms, and Colours.

The foſſil Corals never have in them any thing of fibrous, or vegetable Nature; which moſt of the marine Corals have: tho' many of them very little. *Confer. Append.* 3. *to the Extract of the Account of the marine Corals.*

And the common conſtituent terreſtrial Matter, incorporated with the cryſtalline in the foſſil Corals, is different from that in the marine. *Vid. e.* 69.93.97.105. *& ſeq.*

§ 4. Many of the foſſil Corals conſiſt of the Matter of the Flint, or Agat. *e*.41. *& ſeq.*

§ 5. Others of them conſiſt of the Matter of the *Pyrites*. *e*.47. 48. and *h*.4.20.41.

C. 5. Of the Origin and Formation of the Foſſil Corals.

They are found, repoſited in the Strata of Earth, Chalk, Stone, Marble, and the like, (*Conf. C.* 3. *ſupra*) along with the Pellicles of Ova of Fiſhes, and Sea-ſhells of all kinds. *e*. 10. *& ſeq.* 84.

Conſequently they muſt have been form'd before ever the Strata were compil'd, or had attain'd their Solidity.

They are apparently all referable to the Nodule-kind; and were form'd at the Deluge, as all other † Nodules were. *e*.1.86.

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† *Nat. Hiſt. of the Earth, Part* iv. *Conſ.* 2.

At that time all terreſtrial Bodies, and in particular Cryſtal, Spar, and Corals, were in a State of Solution; and the Principles, or conſtituent Particles of them, ſuſtain'd in the watry || Maſs. *e.* 1.

After ſome time, thoſe Particles, uniting and combining into Maſſes, compoſed the Metallic, Mineral, Sparry, and Coralloid Nodules.

And, there being ſuſtain'd, in the ſame Fluid, Teeth and Bones of Fiſhes, Shells, and other marine Bodies of all kinds, the metallic and mineral Particles frequently affix'd and concreted upon them. Accordingly there are commonly found Flint, Ores of Metals, and Minerals, adhering to the foſſil Shells ‡. In like manner there are found of the various kinds of foſſil Corals actually adhering to the Shells dug up at Land; and ſome of them, particularly the *Mycetitæ*, have Pedicles, and are affix'd to Shells in much the ſame manner that thoſe found at Sea uſually are. *e.* 1. 10. 11. 33. 49.

As ſometimes Bodies of different kinds join'd in the ſame Nodule: and in particular the Pyrites, Sparry, and other Mineral Matter, grew to Flint; ſo likewiſe there are Inſtances of the Foſſil Corals united to Flints.

In Concluſion, the Nodules of all kinds, and particularly the Coralloids, ſettling down, with the earthy, chalky, ſtoney, and other terreſtrial Matter, were repoſited in the Strata which that Matter compoſed †; in which they are at this day found repoſited. *e.* 1.

C. 6. Of the Modulation, and Compoſure of the various foſſil Corals.

As there is an agreement of many of the foſſil Corals with the marine, in Texture, and in Form; and both were once in the ſame condition, the Particles ſeparate, and ſuſtain'd in Water, thoſe at the Deluge ||, and theſe in the Sea; ſo each owe their Formation to the ſame Cauſe, the Motion and Action of the Water, and the Figure and Diſpoſition of the Particles that conſtitute them.

Of the Formation of the ſtarr'd Flints. *e.* 43 x.

Appendix I. Concerning the Reaſon why the Sea-ſhells, and other animal and vegetable Bodies then in being, were not diſſolv'd, at the Deluge, as well as the Corals, and all Foſſils.

From what has been deliver'd, above, 'tis ſufficiently clear that the marine, as well as the foſſil Corals, had in them ſomething of

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|| *Nat. Hiſt. of the Earth, Part* ii. *Conſ.* 2. *& Part* iv. *Conſ.* 2.

‡ Ibid. *Part* iv. *Conſ.* 2.

† Ibid. *Part* iv. *Conſ.* 3.

|| *Along with the Matter of Metals, Minerals, Stone, Marble, and all other terreſtrial Bodies, then in a State of Solution.* Nat. Hiſt. of the Earth, Part iv. Conſ. 12.

ſtoney and mineral Conſtitution; that, for that reaſon, the marine Corals were diſſolv'd, as well as the terreſtrial Bodies, of all ſorts, at the Deluge: and that the foſſil Corals were finally compoſed out of the coralline, flinty, ſparry, and other mineral Matter ſo diſſolv'd. It has been alſo noted, that ſome of the foſſil Corals affix'd to, and concreted upon Sea-ſhells, that were then ſuſtain'd in the Water along with them. And it being a thing very remarkable that all terreſtrial Bodies whatſoever, even the moſt firm and ſolid, ſhould undergo ſuch Diſſolution, and yet the animal and vegetable Bodies, ſome of which are very tender, be exempted, and remain all the while intire thorough the whole Proceſs of that great Revolution; it may not be unſeaſonable to offer ſomething touching the Reaſon of it. Not that I ſhall now go about to ſet forth all the Particulars of this Affair. To do that, would be tedious; and indeed not needful. So that I ſhall reſerve the reſt to its proper Place; and here reſtrain myſelf to as little a Compaſs as may be, without being obſcure.

The Earth is the great Fund out of which Bodies of all ſorts ariſe, Animal, Vegetable, and Mineral. But Things lie in that Fund with ſo much Confuſion, Mixture, and Uncertainty, that there are not perhaps many Things derived thence that are wholly pure, homogeneous, and unmix'd. Inſomuch that ſeveral animal and vegetable Subſtances have in them an Allay of mineral Matter; as there are mineral Maſſes that contain ſome ſhare of a vegetable Matter. Thoſe Corpuſcles that are truly of animal or of vegetable ‡ Nature, differ from thoſe which conſtitute the mineral *Solids* †, in ſeveral very conſiderable Reſpects. 1. They are lighter, and of leſs ſpecific Gravity, than thoſe of Minerals are. 2. They are of different Figure; the animal and vegetable Corpuſcles being extended, oblong, and frequently ramoſe; whereas thoſe of Minerals are compact, and more cloſely collected about their Center. 3. They are of different Conſtitution. Theſe are flexible ||; but

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‡ *The Animal Corpuſcles are homogeneous, and of like nature with thoſe in Vegetables; from which they were indeed all originally derived. Vid.* Nat. Hiſt. of the Earth, 2d Edit. p. 127. & 227. & ſeq.

† *For this Enquiry is only relating to the Diſſolution of the* ſolid *Foſſils; ſuch as Stones, Ores, and the like.*

|| *I ſpeak here of the Corpuſcles that conſtitute them, and not the Parts themſelves. Some of them,* e. gr. *the Bones, are inflexible. Which does not ariſe from the Inflexibility of the Corpuſcles that compoſe them; but from the Greatneſs of their Number, and the Firmneſs and Tightneſs of their Union and Combination. This is evident from the Bones of Animals that are young and growing; which are tender, and flexible; their conſtituent Particles being then fewer in number, and leſs cloſely united. The ſame likewiſe is the Caſe of Trees;*

but thoſe generally [‡] rigid. 4. They differ in the Manner of their Union and Compoſition. The Corpuſcles of Foſſils are only contiguous to each other, and meerly ſimply apply'd Surface to Surface; whereas thoſe of animal and vegetable Bodies are complicated, tied, and interwoven with one another. 5. They differ in the Cauſe of their Coheſion. This, in animal and vegetable Bodies, proceeds from themſelves; from the Figures of the Parts of the Corpuſcles, and their Twiſtings and Complications with one another. Whereas the Corpuſcles of the foſſil Solids are perfectly paſſive; and owe their Coheſion intirely to the Compreſſion of the external Ambient [†], wherein they exiſt; which Compreſſion ariſes meerly from its Gravity. Now from ſeveral Phænomena, at this day extant in the Earth [‖], it appears that the Gravity of all Bodies, ſolid and fluid, in and about the terraqueous Globe, at the univerſal Deluge, for ſome time, ceaſed, and deſerted them [‡].

Things therefore ſtanding thus, the Conſequences of them are very evident, and obvious. Upon the Ceſſation of the Gravity of

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Trees; which, however firm they may become when grown, were all once very yielding and pliable. Beſides that the Parts of either, being ſplit, and thinn'd, are by that means render'd pliant and flexible. Not that mineral Matter, as has been already mention'd, is wholly excluded the Compages of Bones, Shells, and ſome ſorts of Vegetables. And this may contribute ſomething to the Increaſe of both their Firmneſs, and their Gravity. In like manner there are Foſſils, as alſo Corals, that have a fibrous vegetable Matter incorporated with the mineral. Some indeed of the Corals, and particularly of the red, have ſo much, that 'twould not have been ſtrange, had they been by it ſecured againſt the Diſſolution here treated of.

[‡] *So generally, that I know of only one to be excepted; which is Talc: for this ſeems to be compoſed of Corpuſcles that are flexible.* Vide Claſs 4. Preface.

[†] *Not only the Air, and groſſer, but even the fineſt and ſubtileſt Parts, and indeed the whole Fluid of the Atmoſphere.*

[‖] Vide *Nat. Hiſt of the Earth,* paſſim.

[‡] *Perhaps not intirely. For then, upon the Earth's Revolution on its Axis, all terreſtrial Bodies would have been flung off, from the ſaid Axis; and conſequently the Parts of the Globe, both the Earthy, and the Aqueous, have been diſſipated. So that thoſe Parts and Bodies retain'd ſtill juſt as much of their Gravity, as might ſerve for a Counter-Balance to the Force of that Revolution, to prevent their Diſſipation; but no more. I mean in caſe there was then ſuch a Revolution; which I am the more cautious of aſſerting, becauſe* Moſes *ſeems to imply that both the diurnal and annual Motion of the Earth was ſuſpended for the Time; and that there was then no more a Succeſſion of* Day and Night, *than there was of the Seaſons,* Summer and Winter. *See* Gen. viii. 21. 22. Conf. Jerem. xxxiii. 20. 25.

the Ambient, to which the Foſſils owe the Coheſion of their Parts, their Solidity would inſtantly ceaſe, and the Corpuſcles fall all aſunder. But that would not in the leaſt affect the animal and vegetable Bodies; the Coheſion of whoſe Corpuſcles aroſe from a Cauſe ſo very different, as is the twiſting, weaving, and combination of thoſe Corpuſcles amongſt themſelves; which would not be in the leaſt touch'd or diſturb'd by that means. So that they muſt remain as firm and intire, as if no ſuch thing had ever happen'd.

This may be illuſtrated by the Example of the *Magdeburg* Experiment. In which two Pieces of Marble, having their Surface exactly plane, polite, and apply'd to each other in ſuch manner, as, ſo far as they are contiguous, to intercept the Air, do cohere firmly together as one; the Gravity, of the Air without, preſſing and holding them together. Theſe two Pieces of Marble, thus conjoin'd, being put into a Receiver, and the Air exhauſted, immediately diſunite, and fall aſunder. But if there were put into the Receiver at the ſame time, two Pieces of Cord, that were firmly complicated and tied into a Knot; 'tis plain the drawing out the Air would contribute nothing to the looſing of that Knot, or untying the two Cords.

And this was the very Caſe of the animal and vegetable, and of the foſſil Bodies, during the time that the Preſſure of the Ambient was taken from off them at the Deluge; and lets us clearly into the Reaſon why theſe were not diſſolved as well as the Foſſils.

The Coralloid, and the other Nodules, form'd after that Diſſolution † indeed, but during the Suſpenſion and Relaxation of the Cauſe of Gravity, muſt have been at firſt ſoft; but as ſoon as the total Gravity was again reſtor'd to Bodies, they became ſolid, and ſettled down; and, along with the Shells and other extraneous Bodies, the Earth, Sand, and the like, compiled the Strata in which they are at this day found.

In this Catalogue there are ſeveral Inſtances of Nodules, and particularly of Pebles and Flints, that appear to have been ſo ſoft as to have given way to external Force and Preſſure ſince they were form'd. So likewiſe for the Bodies of this Claſs, the foſſil Corals, ſome of them appear to have been compreſs'd, others inflected, and crack'd, in ſuch manner as could not have happen'd but before they had attain'd their preſent Hardneſs. *e.* 15. 22 †. 40. 49. 50. 65.

Theſe Nodules, being form'd in Water, muſt have, in courſe, watery Particles diſſeminated thro' their Pores and Interſtices. So that, during the abode of thoſe Particles in them, the Bodies could not attain their full Solidity. But, as they ſucceſſively withdrew and gave way, their Corpuſcles approaching nearer to each other, the Nodules became more ſolid, cloſe, and firm; or at leaſt the Parts of them: for it ſometimes ſo happen'd, that by this Action, they were crack'd and divided into Parts. Of this the *Ludus Helmontij* affords us an egregious Proof, (*Vide* Preface to the Account of that Body, *ſupra.*) Nay, by the like Action the Strata of Coal, Stone, and Marble, were frequently crack'd in like manner. But tho', in tract of time, part of the Water, wherewith they were ſaturated, thus quits them, yet the whole never drains forth, nor do they arrive at their utmoſt Solidity till they are brought up, out of the Bowels of the Earth, into the Air. This is evident in Stone, and in Marble, which are ſofter, and may be cut and work'd with much greater eaſe, when firſt parted from their Strata, than afterwards when they are rais'd to the Surface, and have lain there till wholly freed from the Humidity wherewith they were charg'd whilſt below.

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† Vide *Nat. Hiſt. of the Earth, Part* iv. *Conſ.* 2.

CLASSIS V.

Corpora Coralloidea, & hiſce affinia.

PARS I.

Coralloidea ramoſa.

SECT. 1. Coralloidea ramoſa, ſuperficie lævi.
2. Corall. ram. ſuperficie reticulatâ.
3. Corall. ram. ſuperficie ſtellatâ.
4. Corall. ram. à ſuperficie ad Medullam ſtriata, ſeu lineata.

PARS II.

Coralloidea Cylindriformia.

SECT. 1. Coralloidea Cylindracea, è lamellis compoſita ſecundum longitudinem à Superficie ad Axin tendentibus.
2. Coralloidea tubuloſa crebris lamellis tranſverſis intercepta.

PARS III.

Coralloidea Columnaria pentaedra.

SECT. 1. Coralloidea oblonga pentaedra, laminis à Superficie ad Axin tendentibus.
2. Coralloidea oblonga pentaedra ſeptis tranſverſis diſtincta.

PARS IV.

Mycetitæ Coralloides.

Sect. 1. Mycetitæ Conoides, ſeu Calyciformes.
2. Mycet. forma compreſſa, ſeu Diſcoides.

PARS V.

Aſtroitæ Coralloides.

Sect. 1. Aſtroitæ Stellis prominulis.
2. Aſtr. Stellis in plano delineatis.
3. Aſtr. Stellis depreſſis.
4. Aſtr. Foraminoſi, ſive à Superficie ad interiora Corporum excavati.

CLASSIS V.

Corpora Coralloidea, & hiſce affinia.

PARS I.

Coralloidea ramoſa.

SECTIO I.

Corpora Coralloidea ramoſa Superficie lævi.

e. 1. Five ſmall Branches of Coral, of a grey Colour; and one white. Found in a Quarry not far from *Enſum-Ferry, Oxfordſhire.* One of them has the Shell of a *Vermiculus Marinus* adhering to it: 'Tis very common to ſee Flint and other mineral Matter affix'd and adhering to foſſil Shells. This apply'd itſelf to them during the time that the ſaid Shells, and the diſſolv'd mineral Matter, were ſuſtain'd together in the Water at the Deluge. *Vide Nat. Hiſt. of the Earth, Part* iv. The Caſe of this Coralloid Matter was the ſame. Nor can I ſee any reaſon why real Coral, not different from that now obſerv'd at Sea, may not be found: and adhering alſo in like manner to Shells. There are below ſome Bodies that I take to be Inſtances and Proofs of it, and really of the ſame ſort. *Vide e.* 12. 33. 34. 49. 55. The true marine Coral is indeed a ſtoney Subſtance; and of mineral Nature and Origin. The conſtituent Matter of it is beat off from the Rocks and Cliffs, where the Agitation of the Sea is great; born thence, precipitated, and affix'd to Rocks, Stones, Shells, or other Things, where the Water is more ſtill and calm. As 'tis of the ſame Conſtitution, ſo it owes its Solidity, and the Coheſion of its Parts, to the ſame Cauſe that Stones and other Minerals do: and conſequently muſt have undergone the ſame common Fate, and been diſſolved, as well as they, at the Deluge. And *that* Coralline Matter, ſo diſſolved, might as well concrete again, as that Matter which conſtituted the mineral Nodules, particularly thoſe of this Claſſis, and Flints, Pyritæ, *&c.* Nor can there reaſonably be any doubt, but there was, in ſome parts of the Fluid, a Collection of homogeneous Coralline Matter: as from the Nodules we learn there was of Talky, Cryſtalline, and other Mineral Matter. Now, out of that, Coral might as well be form'd, as Talky, Cryſtalline, and other Mineral Nodules out of thoſe diſſolved Minerals.

e. 2. A Piece of a Coralloid Body, black, both on the Outſide, and in the Body, where broken. 'Tis not much above half an Inch long, thicker than any of the precedent, a little bent, and appears to be part of a Branch broken off from the reſt. Out of a Quarry near *Windruſh, Glouceſterſhire.*

e. 3. A great Number of Coralline Bodies, lodg'd pretty cloſe in a grey Stone. They are generally near as thick as a Wheat-Straw: and ſome of them are branch'd, but whether all, is not ſo eaſy to diſcern. In a few there are Branches from one to another, which, meeting, join them together. Found on the Shore near *Sunderland,* in the *Biſhoprick of Durham.*

e. 4. A *Faſciculus* of ſeveral Pieces of a grey Coral, lying generally parallel, and held together by means of ſeveral ſmall Branches paſſing from one to another, and uniting where they meet. The whole ſomewhat reſembles the *Tubularia purpurea* of *Ferrante Imperati:* and the Stems of this are of the thickneſs that thoſe of that commonly are. Some of them are tubular, others ſolid. Found near *Sedberg,* in *Yorkſhire.*

PARTIS I. SECTIO II.

Corpora Coralloidea ramoſa ſuperficie reticulata.

e. 5. A pretty thick Piece of grey Coral, having the Veſtigia of three Branches riſing out of it. It is finely cover'd with a ſort of Net-work all over its Surface, the Maſhes ſmall, and round. Found in a Stratum of Rubble-Stone, lying over the blue Lime-Stone, in the great Pits near *Dudley, Staffordſhire.*

e. 6. Another ſmaller, otherwiſe little different, from the ſame Place. Being broken, it appears to conſiſt of a grey Spar. This is only a Piece broken off a Branch: as alſo *e.* 8. *infra.*

e. 7. Another from the ſame Place. The Maſhes of the *Reticulum* in this are ſmaller than in either of the former. The Trunk of it runs into two Branches.

e. 8. Another, the Maſhes ſtill leſs. This differs from the reſt, in that it is ſtriated from the Surface throughout to the Middle of the Body. From the ſame Place. This is indeed nearly related to that *e.* 13. *infra,* and might as well be placed in that Section. *Vide e.* 6. *ſupra.*

e. 9. Another, with one Branch ariſing out of it. This is partly reticulated, and partly ſtriated on its Surface. From the ſame Pits.

e. 10. A ſmall white Piece, bifurcated, or branching into two, and finely reticulated all over. It lay in a whitiſh Stone, thick ſet with the Pellicules of Ova of Fiſhes, and Fragments of Shells; having upon it likewiſe a fair Impreſſion of a ſmall Pecten. Found in a Stone-Pit on the South-Eaſt Side of *Wakerby, Northamptonſhire.* Mr. *Morton.*

PARTIS I. SECTIO III.

Corpora Coralloidea ramoſa ſuperficie ſtellata.

e. 11. A pretty large Piece of a Coralline Body, of a brown Colour, dividing itſelf into three Branches, a few ſmall whitiſh Stars appearing on ſome parts of the Surface of it. It lies in a grey Stone, in which are many Fragments of Sea-Shells of ſeveral ſorts. Found in a Stone-Pit near *Broadwell-Grove,* (on the Edge of *Oxfordſhire*) in *Glouceſterſhire.*

e. 12. A Piece of a ramoſe Coralline Porus, having its Surface thick ſet with Stellar Pores, very fair, and diſtinct, in a Quincunx Order. Found in a Chalk-Pit, upon the Downs, near *Croydon, Surrey.*

PARTIS I. SECTIO IV.

Corpora Coralloidea, ramoſa, à ſuperficie ad medullam ſtriata, ſeu lineata.

e. 13. A ſmall Piece of a Coralline Body, with part of a Branch riſing out of it. The Surface is black, and reticulated all over much like *e.* 8. It is not perfectly round, but of a flattiſh Shape. Both the Body and Branch are ſtriated from the Surface to the Middle: and there are ſeveral Circles in the Subſtance of it interſecting the Striæ. So that, ſomewhat reſembling, in Shape and Texture, the Branch of a Tree. This ſort is not unfitly called *Stelechites,* by the Writers of Minerals. From *Tortenho* in *Cumberland:* from whence I had ſeveral, little different, only that few of them had any Veſtigia of Branches, being perhaps only Pieces. Mr. *Morton.*

e. 14. Another, of a dark yellow Colour, with three Branches riſing out of it. This is not only ſtriated from the Surface to the Middle, but has Striæ running lengthways both on the Body and Branches of it. The Striæ are ſo fine, that they are but juſt perceivable: and are in ſome places wanting, it ſeeming to have been fretted and worn. 'Twas found amongſt the Gravel in the quadrangular Court of Sir *Ralph Dutton*'s Houſe at *Sherborn, Glouceſterſhire.*

PARTIS II. SECTIO I.

Coralloidea Cylindriformia è Lamellis compoſita ſecundum Longitudinem, à ſuperficie verſus axem diſpoſitis.

e. 15. A ſingle Coralline Cylinder, 1¼ Inch in Length, and ¼ of an Inch in Diameter; ſtriated not only from the Surface to the Axis, but upon its Surface likewiſe with Striæ parallel to its Length. There are alſo 12 or 13 annular Ridges round it. 'Tis of a grey Colour. Found with N° 5. *ſupra,* in the Lime-Stone-Pits near *Dudley.* At one End 'tis crack'd, and compreſs'd as if by ſome external Force, before it had attain'd its preſent Hardneſs.

e. 16. Part of a Cylindraceous Body, an Inch in Diameter, and near as much in Length. The Plates paſſing from the Sides to the Axis are of a grey Spar, ſprinkled very thick with ſmall Sparks of a very bright Cryſtalline Spar. They are externally tinctur'd, in ſome parts, with a ferruginous Colour, and in others with a light brown. Found in ſinking a Copper-Mine upon *Ormſhead,* alias *Lhandidno,* in *Caernarvanſhire.* There are found along with theſe Bodies grey Flints, whereof ſome parts are ſolid, and capable of a Poliſh; others are ſcabrous and porous. To theſe Flints the Bodies of the ſort now deſcribed do frequently adhere.

e. 17. Many like Bodies, but thicker ſomewhat, and longer; ſome of them double the Length of the preceding, lying pretty cloſe, and parallel to one another, in a brown Sand-Stone. They are moſt of them broken: and appear to conſiſt chiefly of a grey Spar. From the Rocks at *Helsfield,* near *Kendal, Cumberland.* Mr. *Fitz-Roberts* informs me, that they are found plentifully on the upper Surface of the uppermoſt Stratum but one, ſtanding all of them erect, with their Tops tending into the horizontal Fiſſure that parts the two Strata. He never ſaw any of them lodg'd, or wholly immers'd in the Maſs of Stone. Two of them have Branches, of the ſame Conſtitution, riſing out of them. *Conf. e.* 18. *infra.*

e. 18. A Piece of the ſame Stone, with ſeveral like Bodies in it. The Striæ, tending from the Surface to the Axis, in theſe, are intercepted by ſeveral ſmall white Circles within one another. From the ſame Place. See an Hint about the Origin and Formation of theſe, in the Account of the Spar, *Engliſh Additional Native Foſſils, b.* 170. I am not without Suſpicion, that the Honey-Comb-Stone is form'd in like manner; at leaſt I have ſeen it in the horizontal Strata of Stone in ſome Quarrys near *Oxford. Conf. e.* 22. *e.* 84, 85. *infra, & e.* 17. *ſupra.*

e. 19. A Maſs of a pale brown Stone, in which are lodged, in various Situations, ſeveral Cylinders about ⅕ of an Inch in Diameter. They are made up of Plates, placed lengthways of the Cylinders, ſo as to compoſe ſuch a ſort of Stellar Pore, as is deſcrib'd N° 12. *ſupra,* running through the whole Length of the

Body. These Plates are ſet in a ſmall Tube. The whole conſiſts chiefly of a ſemipellucid Spar. Found looſe in a Stone-Pit, on the Top of *Hackneſs-Head,* a high Hill near *Scarborough, Yorkſhire.*

e. 20. Several like Bodies, but ſomewhat leſs, placed parallel to one another, and very thick, in a brown Flinty Subſtance. Theſe conſiſt chiefly of a whitiſh Spar; and are made up of white Plates, ſet as thoſe of the former are, but have no Pores, the Intervals of the Plates being wholly fill'd up with a ſomewhat more pellucid Spar. *Kendal, Cumberland.*

e. 20*. Like Bodies placed alſo in the ſame manner, in a very hard grey Stone. From - - - - - - in *Brecknockſhire.*

e. 21. Several Cylinders, little different from the former, only that they are ſcarce ſo white, and ſet in a brown Stone. Many of the Cylinders in this, and the following Bodies to *e.* 30. incluſive, have not the Plates ſo diſtinct, and eaſily perceivable, as thoſe of all the foregoing. Indeed ſeveral of them ſeem to be wholly ſolid. Shores of *Minehead, Somerſetſhire.*

e. 22. Several Cylinders like thoſe of the precedent, ſet very thick in a dark Stoney Maſs. Found between *Skegneſs* and *Ingoldmells,* on the Shores of *Lincolnſhire.*

e. 22*. Like Cylinders, about $\frac{1}{8}$ of an Inch in Diameter, conſiſting of a white ſhining Spar-like Subſtance; but they are externally of a very dark grey, which is the Colour of the Stone in which they lie, very cloſe, and parallel to each other. The Stone off which this was broke, tho' itſelf only a Fragment, was near two Foot long: and the Cylinders extended through it for that whole Length. Sent me by the very learned Dr. *Cay,* by the Name of *Junci Lapidei,* or *Marmor junceum.* The Maſs takes a very good Poliſh. 'Twas taken out of a Quarry betwixt *Carliſle* and *Cockermouth.* The common Stone of the Quarry is much different; and this is found only in Spots: but, as he was informed, placed there in ſuch a manner, that the Cylinders ſtood erect. *Conf. e.* 17. *&* 18. *ſupra.*

e. 22†. Another Piece of the ſame Stone. In this the Cylinders are many of them bent: not naturally, but by ſome external Force; they being apparently crack'd. There is in it a ſmall Vein filled with Spar, probably ſince the Time of the Compilation of the Maſs.

e. 23. A Stone of a brown Colour, thick ſet with parallel Cylinders, little different from thoſe of *e.* 21. *&* 22. In all theſe three, the Stoney Matter being ſtripp'd off by ſome external Force, the Cylinders appear on one Side of the Peble naked and fair in view. Found on the Shores near *Sunderland* along with *e.* 3.

e. 24. A grey Stone, in which the parallel Cylinders are of the ſame bigneſs, and placed as thick as thoſe of the former; but are whiter, and more like Marine Coral, and ſome of them very plainly at the Ends radiated as a Star; that Form ariſing from the Poſition of the *Lamina* deſcribed already. Found on the ſame

Shores with the former. On one part of the Body are ſeveral Cylinders, in a Poſition tranſverſe to the others: and one of them as thick again as any of the reſt.

e. 25. A grey Stone, very thick ſet with like Cylinders. This, and ſeveral of the following, are worn ſmooth by the Sea; ſo that the Cylinders appear, on all ſides, variegating the Stone in a very beautiful manner. From the Shores near *Outhorne, Yorkſhire.*

e. 26. Another leſs, and of a brown Colour. Found between *Skegneſs* and *Ingoldmells*, on the Shores of *Lincolnſhire.*

e. 27. Another black, the Cylinders ſmaller. From the ſame Shores.

e. 28. Another black, leſs, but the Cylinders ſomewhat larger. Found on the Shores near *Scarborough, Yorkſhire.*

e. 29. Another, of a dark grey Colour: and the Cylinders, being white, variegate the Stone very prettily; making together a very elegant Body. This was found on the Shores of the River *Humber*, in *Yorkſhire*, near *Paul.*

e. 30. A brown Stone, very thick ſet with greyiſh Cylinders, whoſe Ends appear on all Sides of it. Found on the Shore of the River near *Thripland*, in *Weſtmorland.* There were more of the ſame.

e. 31. A brown Stone, ſet with whitiſh Cylinders. Theſe are in ſome meaſure porous, the Intervals of the Plates being not quite fill'd. Sea-Shores, *Sunderland.*

e. 32. A grey Stone, in which are ſeveral white ſparry Cylinders, ſomething larger than thoſe of the former, and ſet in a Quincunx Order. Found on the Shores of *Lincolnſhire* with Nº 22. *ſupra.*

e. 33. A Maſs, not quite ſo hard as a Peble, of a very dark grey Colour. In it are ſeveral large Cylinders, being generally above $\frac{1}{4}$ of an Inch in Diameter. The longitudinal Plates paſſing from the Surface to the Axis of the Body, are white, and their Interſtices fill'd with a pellucid Matter. The Coralline Bodies being white, and the Stone near black, appear together very beautiful. Found on the Shores of the River *Tyne*, near the Sea, at *North-ſhields.* This Stone, where broken, on one part exhibits an Impreſſion of a Bivalve: and there are immers'd in it three or four Pieces of the *Spina* of an *Echinus Ovarius. Confer. e.* 34.

e. 34. A ſmall Stone, of a dark grey Colour. 'Tis flat, being worn and ground by the Motion of the Sea. In this are Pieces of Cylinders of ſeveral Diameters, from $\frac{1}{12}$ to $\frac{1}{2}$ an Inch over: compoſed of Plates paſſing towards the Axis of the Bodies. They are interſected by other Plates, ſo as when broken, the Bodies appear reticulated. The cylindraceous Bodies in this, and *e.* 33. are white: and, both in Subſtance and Texture, reſemble a ſort of Porus, which we have from the Sea. This was found on the Shores near *Skegneſs, Lincolnſhire.*

e. 34*. Coralloid Cylinders, ſet parallel to each other, in a grey Stone. This is worn in ſuch manner, as very fairly to ſhew the interior Conſtitution of the Cylinders, which have *Lamellæ*, from their Surface to their Axis, for their whole Length, like the reſt of the Bodies of this Section: which likewiſe are intercepted by tranſverſe *Lamellæ*, like thoſe in the following Section; which probably would appear to be the Caſe of ſeveral of the other Bodies in this Section, if their interior Conſtitution were as fairly expos'd to view. *Potgill*, near *Hartly*, in *Weſtmorland*.

e. 34†. Coralloid Cylinders, of much the ſame Conſtitution with the foregoing, but larger, being $\frac{1}{4}$ of an Inch in Diameter. They are environ'd outwardly with annular Circles, ſet very thick and cloſe together. From - - - - - - *Cumberland*.

PARTIS II. SECTIO II.

Coralloidea tubuloſa crebris lamellis tranſverſis intercepta.

Vide *Ind. ſupra*, *p.* xxvii. *e.*

e. 35. A Stone of an Iron-Colour, wherein are lodged many Tubes, appearing to be of a Spar, white, with a reddiſh Caſt. They are generally about $\frac{1}{8}$ of an Inch in Diameter, pretty near ſtreight, and parallel to each other. The Stone is thick ſet with them. Throughout the whole Length of the Tubes, are Plates of the thickneſs of $\frac{1}{36}$ part of an Inch croſſing the Tube, the Interval between each Plate being of about the ſame Dimenſions. Shores near *Outhorne, Yorkſhire*.

e. 36. Another, brown; ſet pretty thick with Tubes of the ſame Size and Matter with thoſe of the foregoing, only without any Mixture of Red. The Tubes are ſtriated length-ways; and their Cavities ſet with Valvules, or Septa, like thoſe of the former. Shores near *Skegneſs, Lincolnſhire*.

e. 37. Another; neither the Stone nor Cylindrick Tubes here differ from the former, only one of them has a Branch riſing out of it. From the ſame Shores. Mr. *Morton*.

e. 38. Another, but ſofter, grey Stone, thick ſet with like Cylinders, but irregularly placed; thoſe of the precedent from N° 17. lying generally parallel to one another. One of theſe Cylinders is crooked, as if bent almoſt double. From the ſame Shores.

e. 39. A brown Nodule, very hard, and thick ſet with Tubes, variouſly placed. The Hollows of the Tubes have Valvules in them, which are croſs'd by thin Plates paſſing the whole length of the Tubes. The Intervals being empty, the Tubes appear cancellated where broken. They much reſemble a ſort of Coralline Pori. From the ſame Shores.

e. 40. A Stone of a light brown Colour, very thick ſet with ſmall Tubes, in various Poſitions, ſome few of them a little crooked. The Diaphragms or Valvules are whitiſh: and have their Intervals fill'd up with a browniſh Sparry Matter. The Ends of ſeveral of the Tubes appear ſtellated, they ſeeming to have *Laminæ* paſſing from the Surface to the Axis through the whole length of them, of which indeed there are ſome Veſtigia in moſt of this Claſs. Found alone on the Road between *Bradford* and *Leeds*, *Yorkſhire.*

P A R S III.

Coralloidea columnaria pentaedra.

S E C T I O I.

Coralloidea oblonga pentaedra laminis à ſuperficie ad axem tendentibus.

*e.*41. A grey, ſemi-pellucid Flint, the Ground much like the *Indian* Agat, but thick ſet with white Pentagonal Columns, about $\frac{1}{4}$ of an Inch in Diameter. They are made up of ſeveral longitudinal thin Plates, all ſet edgeways towards the Axis. The Columns ſtand parallel to one another: and are placed at equal diſtances, being about $\frac{1}{20}$ of an Inch from each other. The Body being cut tranſverſly, its whole Surface appears like a Net made up of pentagonal Maſhes, with a pentagonal Star in each Maſh. The Sides of the Columns are not exactly equal, and conſequently not thoſe of either the Maſhes or Star. From ----- *in Wiltſhire.*

*e.*42. An oval Plate cut tranſverſly off the precedent Flint, and poliſhed. It takes as good a Politure as any Agat: and is a wonderfully beautiful Stone.

*e.*43. A piece of another, of the ſame ſort, from the ſame Place. In this the Ends of the Columns terminate in the ſeveral ſtellar Cavities at the under Surface of the Flint, much like thoſe in the larger Aſtroites, or ſtarr'd Honey-comb-ſtone.

*e.**43. A piece of another. In this the Stars, on one ſide, are hollow, ſo as exactly to reſemble a common Species of marine coralline Aſtroite: on the other ſide, the Hollows are fill'd with a flinty Matter. This Body ſhews plainly that theſe ſtarr'd Coralloids were form'd after the manner of the ſtarr'd Sea-Corals: and differ only in the additional flinty Matter. From the ſame Place.

P A R T I S III. S E C T I O II.

Coralloidea oblonga pentaedra, Septis tranſverſis diſtincta.

*e.*44. A Coralloid Body, of a grey Colour, made up entirely of ſeveral ſmall quinquangular Columns, croſs'd very thick with tranſverſe Septa. At the end of each appears a ſmall pentagonal Cavity, by which means that part of the Surface of the Body is reticulated all over. The Columns are not placed parallel; but ſo that they point and verge towards a Center. This was found in the great Lime-ſtone Pit, near *Dudley*, *Staffordſhire.*

e.45. Another, the Reticulum upon this is very uniform, and elegant. The Stone is broken on one part: and appears within to be compos'd of a grey Spar. From the ſame Place.

e.46. Another, with a like Reticulum ſpread over the whole Surface of it. From the ſame Pit.

PARS IV.

Mycetitæ Coralloides.

SECTIO I.

Mycetitæ Conoides, ſeu Calyciformes.

e.47.48. Two ſmall Muſhroom-ſtones, in form of a bluntiſh Cone, near half an Inch in length, and $\frac{3}{10}$ croſs the broader End. They are of a grey Colour, and made up of Lamellæ running from the outer Surface to the Axis of the Cone. They terminate ſo as to make a round ſtellar Cavity at the broader End. The Lamellæ are held together by a whiter Matter interpos'd betwixt them. I collected ſeveral of them on the Shores of the Iſland of *Sheppey*, ſome of which are ſince diſſolv'd, and appear to be compos'd chiefly of Vitriol, which ſhoots plentifully out of them, in form of a white Salt, after they have been ſome time expoſed to the Air.

e.49. Fifteen other Muſhroom-ſtones of near the ſame Shape with the precedent. Some of them are ſomething bigger, and others leſs than thoſe are. Theſe are of a white Colour, and in Shape exactly reſembling a ſort of Coralline Fungus of Marine Original, which I have by me. Some of them, at the ſmall end of the Cone, expand themſelves into a flat Plate as if they had adhered to ſome other Body: and two of them have fragments of Cruſts of Echini affix'd to that part of them; to which Cruſts, ſuſtain'd in the Water of the Deluge, the Particles, conſtituting theſe Muſhroom-ſtones, affix'd and concreted. Two or three of them appear ſomewhat bow'd or incurvated. From the Chalk-Pits of *Purfleet*, *North-fleet*, *Greenhythe*, and *Croydon*.

e.50. Three other like Bodies, of a dark grey Colour, $\frac{3}{4}$ of an Inch long and a little incurvated. Theſe end in a ſomewhat ſharper Point than the former; and are incompaſs'd by ſeveral annular Ridges. One of them, being broken, appears within to be made up of a grey Spar. From the Rocks near *Kendal*, *Weſtmorland*. There are alſo Muſhroom-ſtones of this kind found at *Torpenhoe*, in *Cumberland*.

e.51.& 52. Two others, of a red Colour, near as big again as the precedent, but of a compreſt Shape. Otherwiſe they differ little from the former. From *How-Lees*, betwixt *Newbiggin* and *Stainton*, *Cumberland*. Mr. *Nicholſon*, afterwards Lord Biſhop of *Carliſle*.

e.53. Another from the ſame Place, not compreſt, and much ſhorter than either of the foregoing.

e. 54. Another Muſhroom-ſtone, of a light brown Colour, $\frac{3}{4}$ of an Inch in length. This conſiſts of a round Stalk $\frac{1}{2}$ an Inch thick, ſwelling at one end into a Head $\frac{3}{4}$ of an Inch over; upon which is a ſhallow ſtellated Cavity. 'Tis made up of Laminæ plac'd as in *e*. 47. and 48. This was found in a Gravel-Pit, in a Valley near *Wheat-Lands* Mill, beyond *Northleach, Glouceſterſhire.*

e. 55. Another, in ſhape not much unlike the former, only ſomewhat bow'd; but much larger, being 2 $\frac{1}{2}$ Inches long, and the Head near two Inches over. The Plates, of which it conſiſts, are white: and appear of a Subſtance very like Coral, where freed and clean'd from the grey earthy Matter which is inſinuated into it. Out of a Lime-ſtone Quarry, near *Dudly*, in *Staffordſhire.*

e. 56. Another, ſomewhat bow'd and compreſs'd; 1 $\frac{1}{2}$ Inch in length, and above $\frac{3}{4}$ of an Inch over at the Top. There are four Angular Ridges environing it, at about $\frac{1}{4}$ of an Inch diſtance from each other. It conſiſts of a grey Spar: and was found on the plough'd Lands in the Fields on the Weſt ſide of *Oxford.*

e. 57. Another little different, only leſs, being but an Inch long. Found with the former.

e. 58. Another of much the ſame Shape and Size with the precedent. This is made up of a grey Spar, but outwardly colour'd with a blue Clay, in which it lay. In a Pit at the Foot of *Shotover-Hill* near *Oxford.*

e. 59. Another found in the ſame Clay tinged with it, and compos'd of a like Spar with the former. This is of a conick Shape, an Inch and half in length, and near as much in Diameter, at the broader end, where 'tis hollow'd, in manner of a Cup, for above half the length of the Stone.

e. 60. A *Mycetites*, of a grey Colour, the leſſer end appearing abrupt and about $\frac{1}{2}$ an Inch over, the other near an Inch. 'Tis of a Form ſomewhat compreſs'd, being ſcarce half an Inch high. The Laminæ appear at both ends tending towards the Axis of it. From the great Lime-ſtone Quarry, near *Dudley, Staffordſhire.*

e. 61. Another like Body, but leſs, and of a white Colour, having a conſiderable cup-like Cavity in it. There ariſes out of one ſide of it, a Body of much the ſame Size and Shape with that *e*. 57. Found on the plough'd Lands with *e*. 56. and 57.

e. 62. A Muſhroom-ſtone conſiſting of ſeveral Laminæ plac'd as in the former: and ſurrounded with ſeveral pretty high annular Ridges. 'Tis inclining to a conick Form, though abrupt, and not coming to a Point. The Length of it is 2 $\frac{1}{2}$ Inches, the Diameter 1 $\frac{1}{2}$ where broadeſt. 'Tis of a Ferruginous Colour: and by that, and its weight, ſeems to hold Iron. Found looſe upon the Sides of St. *Vincent*'s Rocks near *Briſtow*, amongſt many other like Bodies, beat out of the Stone by Rain and Weather.

e. 63. Another about the ſame length, but not ſo thick, nor ſo taper, as the former: nor are the Ridges about it ſo high. It ſeems to be of the ſame Nature and Compoſition with that: and was found in the ſame Place.

e. 64. Another, little different from the preceding, but thinner, and rough, as if eroded, on the outſide. 'Tis broke in one part, where there appears a whitiſh Spar incorporated with it. Found alſo on St. *Vincent's* Rocks.

e. 65. A Body of the ſame Colour and Subſtance with thoſe *e.* 49. *ſupra*, with a ſtellar Cavity, and Laminæ paſſing towards its Axis, thorough the whole length of it, as in thoſe; tho' 'tis of a different Shape, being not at all tapering, but of near the ſame thickneſs, *viz.* $\frac{3}{8}$ of an Inch in all parts, crooked, and diſtorted. 'Tis an Inch and half in length. From the great Chalk-Pit at *Northfleet, Kent.*

e. 66. Another, of a grey Colour, near two Inches in Length, and one and $\frac{1}{4}$ in Diameter. The Shape and Texture nearly agreeing with the precedent: only the Intervals of the Laminæ paſſing lengthwiſe of it, and appearing at the two oppoſite Ends, are moſt of them fill'd with an adventitious brown earthy Matter; whereas in that they are generally empty. Found on the Sea-ſhores near *Scarborough, Yorkſhire.* This, and the preceding Bodies, being not only made up of Longitudinal Plates paſſing towards an Axis, but likewiſe of a Shape nearly cylindrical, may be more fitly referr'd to thoſe, *Part* 2. *Sect.* 1.

e. 67. Another, of much the ſame thickneſs in the middle as *e.* 65. *ſupra*, but ſomewhat tapering towards each end. 'Tis 1 $\frac{1}{2}$ Inch in length, of the ſame Colour, Subſtance and Texture, and found in the ſame Chalk-Pit with *e.* 65. There are Parts of the Baſes of ſeveral Balani affix'd upon it.

PARTIS IV. SECTIO II.

Mycetitæ forma compreſſa, ſeu Diſcoides.

e. 68. Twelve Stones, opake externally, and of a yellowiſh brown Colour, but conſiſting within of a white ſemi-pellucid Spar, as appears by one of theſe, and many others, which I have broken. They are all of a compreſt Shape: but ſome more, and ſome leſs. They are generally round, and all theſe are ſo except two, which incline towards an Oval. One ſide of them, which may be termed the Baſe, is generally flat, but in ſome of them ſomewhat concave: the other ſomewhat riſing and convex. In the middle of this ſide is a little Hollow or Umbilicus; from whence ariſe many very fine Sulci or Striæ, and ſmall Ridges, alternately, paſſing on, of all ſides, and terminating in the middle of the Baſis. Upon the Surfaces of ſome of thoſe Stones appear many extreamly ſmall glittering ſparry Sparks. The leaſt is not quite $\frac{1}{4}$ of an Inch in Diameter, the largeſt above $\frac{3}{4}$ of an Inch. The thickeſt is half an Inch in perpendicular height, the leaſt not $\frac{1}{10}$. Theſe Stones are called by Doctor *Plot, Porpites,* as much reſembling a Hair Button. Theſe here were found generally on the plough'd Lands in the Weſt of *Oxfordſhire*, and thoſe Parts of *Northamptonſhire*, *Glouceſterſhire*, and *Berkſhire*, which adjoin to it.

e. 69. Two like Bodies of a middle Size, the Surfaces of theſe are ſmoother, having the Striæ ſo extremely fine as to be but juſt diſcernible by the naked Eye. Found on plough'd Lands on a Hill near *Enſum-Ferry*, *Oxfordſhire*.

e. 70. Another, of a flat compreſt Shape, almoſt an Inch in Diameter. The Baſis of this is flat; but hollowed by the Edges riſing into a Brim quite round. It is ſtriated and ridg'd on both ſides, but the Ridges in this and all the following to *e*. 79. are groſſer than thoſe of the precedent. *Broadwell-Grove*, *Glouceſterſhire*.

e. 71. This is little different from the preceding. *Aulſworth*, *Glouceſterſhire*.

e. 72. & 73. Two others, thicker than the foregoing and broader, being above an Inch in Diameter. The Baſes of theſe are a little concave: and not ſtriated to the Center as the former; but have ſeveral annular Striæ, within one another, ſurrounding the Center. There appear ſome ſmall gliſtering Sparks upon them: and having broke ſeveral of them, I find them to conſiſt chiefly of a ſemi-pellucid Spar. *Riſington Parva*, *Oxfordſhire*.

e. 74. A Stone of the ſame Texture and Breadth with the two laſt; but flatter, and of a dark grey Colour, all the foregoing being of a light brown. The Ridges in this, and the following, are thick ſet with very little Knobs. From the Shores near *Whitton*, *Lincolnſhire*.

e. 75. Another of the ſame Texture, Colour, and Conſtitution; only in this the ſtriated ſide is a little Concave, and the oppoſite proportionably Convex. This alſo and the four following, from *Whitton* Shores.

e. 76. Another, not different, only leſs, being but about half an Inch in Diameter, and having its Baſis flat. *Whitton* Shores.

e. 77. Another of the ſame Size and Conſtitution, only the Baſis is concave. This alſo is of a grey Colour. *Ibid*.

e. 78. Another, ¾ of an Inch in Diameter, and ſomewhat more convex than the foregoing. The Baſis of this is flat and ſtriated, the Ridges between the Striæ being punctulated, as are all the foregoing from *e*. 74. incluſive. The upper or convex part is ſmooth, except three annular Striæ deſcribed, round the Umbilicus of one within another. This is of a brown Colour. *Ibid*.

e. 79. Another, grey, and ſomewhat leſs; otherwiſe not different, only that the ſtriated Baſis is a little Concave. *Ibid*.

e. 80. A white Stone of the ſame Diameter with the laſt, but more concave in the Baſe, and more prominent and tending towards a Cone on the Convex part. The Baſe is ſmooth, excepting the Annuli encompaſſing its Center. The upper part is thick ſet all over with very ſmall Cavities. From the great Chalk-Pit at *Greenwich*.

e. 81. Another from the ſame Place, leſs, but otherwiſe little different.

e. 82. A Stone of a grey Colour. The Baſe is pretty flat and diſtinguiſhed by large circular Ridges and Furrows alternately. There are ſome Veſtigia of other Ridges tending towards the middle and croſſing theſe circular ones; ſo that this Body on the ſide appears as if cancellated. The upper part is Convex: and has its Surface pierc'd all over with ſmall round Holes at near equal diſtances. This is about 1 ¼ Inch in Diameter. From the great Lime-ſtone Quarry, near *Dudley* in *Staffordſhire.*

e. 83. A flattiſh Stone much larger than any of the former, being about 2 ½ Inches in Diameter. Each Surface of this is ſomewhat convex, gradually leſſening from the middle towards the Edges all round. The Edges are not plain, but curl'd or undulated. On one ſide there are circular Ridges, and Furrows, alternately, parallel to each other about the Center, in much the ſame manner as ſome of thoſe deſcribed above. Theſe are croſs'd by fine ſmall Striæ, paſſing from the Edges towards the Center. On the other ſide, where-ever 'tis freed from the Sand-ſtone, in which it was originally encloſed, 'tis covered with linear Striæ, tending towards ſeveral Centers, ſo as to compoſe flat ſtellar Figures. Found in a Quarry on the North-ſide of *Sherborn, Glouceſterſhire.*

PARS V.

Aſtroitæ.

SECTIO I.

Aſtroitæ Stellis Prominulis.

e. 84. A Piece of a grey Stone, very hard, with Spar intermingled in ſmall proportion throughout the whole Subſtance of it; but, on one part of it, which is flat, the Spar is in greater Quantity, and in ſome Places ſhot into ſmall Cryſtals. From this flat ſparry Subſtance ariſe ſexangular pyramidal Bodies. They are all nearly of the ſame Size, being about ¼ of an Inch in perpendicular, and ſomewhat more in Diameter at the Baſe. They are ranked, pretty regularly, in a Method, approaching to that of a Quincunx. They ſtand ſo cloſe that their Baſes are contiguous to each other, and are ſtriated, from the Apex to the Baſis; beſides that the Striæ of one run into and communicate with thoſe of the other ſtellar Pyramids all round. In one part of the Stone is a Piece of a Shell of the Pecten kind. Found in a Quarry on *Cowley* Common near *Oxford.*

Theſe ſtarry Efflorеſcencies were form'd on the upper Surface of a Stratum of Stone at a Partition, or horizontal Fiſſure. The part of the Stone, of that Stratum, on which it had ſo concreted, is ſtill joining the ſtarry Effloreſcencies. The Stratum being horizontal, the Effloreſcencies are erect. There were two other thin Strata over that on which theſe were fix'd. *Vid. e.* 18. *ſupra.*

e. 85. A Piece of a whitiſh Stone, very ſoft, and having one Surface ſet all over with ſtellar Prominences, but much leſs than the former. Found in a Stone-Pit, on *Shot-over-Hill*, near *Oxford*, growing on the upper Surface of a Stratum, at the Partition, after the manner of the precedent.

PARTIS V. SECTIO II.

Aſtroitæ Stellis in Plano delineatis.

e. 86. A roundiſh Body of the bigneſs of a large Wallnut, of a yellowiſh brown Colour, like that of the *Mycetitæ*, *e.* 68. and having alſo, like them, upon its Surface, many extremely ſmall, glittering, ſparry Sparks. The Surface is cover'd all over with ſtellar Figures, delineated *in plano*, about $\frac{1}{8}$ of an Inch in Diameter. The Striæ of each of theſe Stars communicate with, and run into the Stars all round it. Having the Stars apparent on every ſide, and there being not the leaſt Mark of Adheſion to any other fix'd Body, 'tis plain this was form'd ſuſpended in the midſt of a free Fluid, as the other Nodules were, at the Deluge, and is itſelf a Nodule.—— Found upon the plough'd Lands in *Yanworth-Fields*, in *Glouceſterſhire*. This is a Nodule, as indeed all of this, and the following Section, are; unleſs it be 90, which is ſo broken, I cannot well judge of it. I broke ſeveral of theſe: and found them, within, conſiſting intirely of a fine, white, tranſparent, cryſtalline Spar.

e. 87. A Stone much larger than the former. 'Tis compos'd chiefly of a coarſe grey Spar; and has all over its Surface Stars much like thoſe of the former. There are ſmall undulated Riſings on ſeveral parts of its Surface, ſo as to make it a little reſemble the Brainſtone, or *Aſtroites maritimus Coralloides undulatus*. Found in a Gravel-pit, in the Road in the Vale beyond the River, near *Wheatlands-Mill*, *Glouceſterſhire*.

e. 88. A large flat Stone, of the ſame Colour and Conſtitution with *e.* 86. and having on the two oppoſite Planes, Stars like thoſe of that, but bigger, eſpecially on one ſide. Some few of the Stars are hollow'd; and paſs in manner of a ſtellar Pore into the Subſtance of the Stone. The Striæ of the exterior part of theſe Stars, which ſtand next the edge of the Stone, paſs down by the ſides of the Stone for the whole thickneſs of it, which is about an Inch, and terminate in the Striæ of the Stars on the edges of the oppoſite Plane. From which 'tis natural to conclude, that, as in ſeveral that I have broken, to obſerve their Fabrick and Texture, both foſſil, and marine, the Stars in this likewiſe paſs the Subſtance of the Stone quite croſs from Plane to Plane. Found on plough'd Lands near *Sherborn*, *Glouceſterſhire*.

e. 89. Another large flat Body, of much the ſame Texture and Conſtitution, but of a grey Colour, excepting a large Vein of a reddiſh ſandy Hue. The Stars in this are larger than in any of the former, being generally about half an Inch in Diameter. Found at the Head of the Spring near *Hilden*, in the Eaſt-Riding of *Yorkſhire*.

*e.*90. A Piece of Spar, white, except on one ſide, where it is flat, and of a brown Colour. This Flat is pretty thick ſet with Stars of the ſame ſize with thoſe of *e.*86. only the Radij of the Stars here ſink ſomewhat deeper into the Stone; nor do the Radij of one Star paſs on and communicate with the adjoining Stars, as in that. From a Lead-Mine at - - - - - - - - - - *Cumberland* Mr. *Nicholſon.*

Partis V. Sectio III.

Aſtroitæ Stellis depreſſis.

*e.*91. A ſparry Nodule of much the ſame Conſtitution with *e.*87. and found in the ſame Gravel-Pit. The Surface is very uneven, riſing into large Knobs on all ſides. The Extremities of the Knobs are ſmooth, as if worn; but the Intervals, and other parts leſs expos'd to Attrition and external Injuries, are beautifully adorn'd all over with little excavated Stars, each about $\frac{1}{10}$ of an Inch in Diameter.

e. 92. A globular ſparry Body, of a brown Colour, near four Inches in Diameter, with ſeveral large Knobs about the Surface. The whole is cover'd over with Stars, ſunk ſomething deeper into it than thoſe of the former. Found on the plough'd Lands near *Northleach,* in *Glouceſterſhire.*

*e.*93. A Piece of white, ſemi-pellucid, cryſtalline Spar. Part of the exterior Surface is of a brown Colour, ſet with like Stars, but ſomewhat larger, very fair, hollow'd pretty deep, and riſing gradually from the Center to the Ambitus of the Star, there terminating in a pretty ſharp Ridge all round. Theſe Ridges communicating with each other, reſemble a ſort of Net-work, with a Star in each Maſh. 'Tis indeed a very beautiful Object. From a Quarry on the North-ſide of *Irtlingborrow, Northamptonſhire.* Mr. *Morton.* See his *Nat. Hiſt. of Northamptonſhire, p.* 183. He informs me that there are found there, of theſe, of different Sizes, from the bigneſs of a Hen's Egg to that of a Man's Head. Their Shape alſo is different; but, being, as he ſays, all Nodules, generally tending towards a globular Figure. The Outſides of them are conſtantly ſtellated all over. I cannot but take the Occaſion to note, that, tho' theſe Bodies agree well with the marine *Aſtroitæ,* as to the exterior Appearance, and Form of the Stars; and doubtleſs owe their Formation to much the ſame Agent: yet the Matter, which conſtitutes each, is very different. For in the marine, that Matter is ever opake; whereas in many of theſe, 'tis tranſparent. The marine, indeed, hold all a little Spar, or Cryſtal; but theſe terreſtrial *Aſtroitæ* hold ſo much, as to be near wholly compos'd of it. *Vid e.*90.*ſupra. e.*94.95. The foſſil Corals are more terrene, and ordinarily of greater ſpecific Gravity than the marine. Then there are foſſil Corals, *Mycetitæ* and *Aſteriæ,* conſiſting of Flint, Agat, Pyrites, and other Matter, much different from that of the marine.

e. 94. Another, from the ſame Quarry. The Edges of the Stars here are not quite ſo ſharp or raiſed as in the former; and the Striæ of the Stars communicate with, and paſs into one another.

e. 95. Another, from ſtill the ſame Quarry, little different, but that the Stars are not ſo depreſs'd.

e. 96. A very large ſparry Nodule, outwardly of a brown Colour, cover'd over with Stars of the ſame Size and Figure with thoſe *e.* 93. From the plough'd Lands of *Sherborn Northfield, Glouceſterſhire*. Having broke ſeveral Nodules of this ſort, I find they conſiſt within of a white, ſemi-pellucid, cryſtalline Spar. In ſome of theſe were Cavities; and theſe there had the Spar finely ſhot and cryſtalliz'd.

e. 97. A ſparry Nodule divided into ſeveral Branches. 'Tis of the ſame Colour with the precedent, and ſtarr'd all over like that. It much reſembles a Species of a marine branch'd coralline *Aſtroitæ* as to its Shape and Stars. But this is externally brown, and that white; this of ſparry, and that of coralline Matter. Found in *Stawell-Fields, Glouceſterſhire*. There is of this ſort, branch'd, found pretty frequently in the plough'd Fields, call'd the *Cheſſles*, near *Coln St. Allens, Glouceſterſhire*.

e. 98. A Branch of a ſparry Nodule of like Conſtitution with the foregoing. 'Tis in ſhape round, almoſt two Inches long, and half an Inch thick, but tapering towards one end. At the other 'tis abrupt; appearing like a Branch broken off from a bigger Body. Plough'd Lands in *Yanworth-Fields, Glouceſterſhire*.

e. 99. A Piece of a Nodule conſiſting of Spar, white within, and brown on the Surface. This is ſet thick over with ſmall round Cavities, appearing as if punch'd, the bottoms of which are flat and ſtarr'd. On one ſide are *Veſtigia* of ſtellar Pores paſſing towards the Center of the Stone. *Farmington-Fields, Glouceſterſhire*.

e. 100. 101. & 102. Two Pieces of a large ſparry Nodule, with a ſtoney *Callimus* of a pale brown Colour, and oblong oval Figure, two Inches in length, and $\frac{3}{4}$ of an Inch in Diameter, that was lodg'd in the middle of the Nodule. The Spar is ſemidiaphanous, white with a Caſt of red, and made up of Plates wedged in with each other in various Poſitions. The external Surface is thick ſet with pretty large Stars. Found in a Stone-pit in the Earl of *Dyſert*'s Yard, in *Northamptonſhire*.

e. 103. A very large ſparry Nodule externally of a brown Colour. It has ſomewhat of the reſemblance of a large Champignon before 'tis open'd, bunching out into a large round Knob at one end, the part proceeding from it being leſs, round, and not unlike a Stalk. Much the greater part of it is cover'd over with Stars, very large, being half an Inch in Diameter. Found on the plough'd Lands near *Aulſworth, Glouceſterſhire*.

e. 104. Another Nodule, of like Colour, Texture, and Shape, but much leſs. The Stars in this are of the ſame bigneſs with thoſe of the former, but ſunk deeper in. Found on the plough'd Lands in *Sherborn-Northfield, Glouceſterſhire.*

Partis V. Sectio IV.

Aſtroitæ foraminoſi, ſive à Superficie ad interiora Corporum excavati.

e. 105. A Body of a flat Figure, an Inch and a half thick, five and a half long, and three and a half in breadth. It conſiſts of a grey Spar; but the Outſide is brown. The two oppoſite flat Surfaces are cover'd all over, in an elegant manner, with Stars, not different from thoſe of *e.* 94. except in bigneſs, theſe being generally $\frac{1}{4}$ of an Inch in Diameter. Several of the Stars, eſpecially on one of the flats, ſink deep into the Subſtance of the Stone, making ſo many ſtellar Pores, with long parallel Striæ running up their ſides from the bottom to the Surface, and there communicating with the Striæ of the neighbouring Stars all round. Some of theſe Pores paſs the Subſtance of the Stone diametrically from flat to flat: and round the Edges of the Stone are long parallel Striæ paſſing it tranſverſly. At the bottom of all the Stars on one of the flats there is a little ſtriated Stud riſing up in the very middle of them. 'Twas found in a Stone-Pit between *Oxford* and *Shotover-Hill, Oxfordſhire.*

e. 106. A Piece of another, from the ſame Pit, little different, only to one of the Flats adheres a Body in Shape like that *e.* 102. but leſs. On this Body for the whole length of it, is a Row of ſtellar Ridges and Striæ, which let fall Rays down by the Sides of it till they meet with thoſe on the Stone to which 'tis affix'd.

e. 107. A ſparry Body, of a ſomewhat lighter grey Colour than the two foregoing, with Stars upon the two oppoſite Planes. On one ſide they are flat, and of the ſame ſort with thoſe Part V. Sect. II. on the other they are concave, but of different Sizes, from $\frac{1}{8}$ to $\frac{1}{2}$ an Inch in Diameter. Some of them paſs deep into the Stone: and on the Sides are Striæ paſſing diametrically between the two oppoſite Planes. Found in the Highways near *Bazieſlye* in *Berkſhire*, near *Oxford.*

e. 108. A grey ſparry Body, with Stars, about $\frac{1}{4}$ of an Inch in Diameter, on the two oppoſite flat Surfaces. Some of them ſink pretty deep into the Stone. In all parts of the Sides of this where broken, appear Lines very numerous and thick, which ſeem to be the Edges of long Plates pervading the Body diametrically from the Stars of one to thoſe of the oppoſite Plane. On one ſide of the Stone theſe Plates are croſs'd by others, ſo as to appear cancellated, very like ſome of the marine Pori. Found near *Scarborough-Caſtle, Yorkſhire.*

e. 109. A ſparry Stone of a blueiſh grey Colour, with Stars, much like thoſe of the foregoing, on the two oppoſite Planes. All round the Sides of it are Canals, like parts of ſtellar Tubes, paſſing croſs the Body. The Longitudinal Plates of theſe are interſected by others exactly in manner of ſome of the marine Pori. Out of a Cliff on the Shores near *Whitton, Lincolnſhire.*

e. 110. A Piece of a white ſparry Body, on the Surface of which are Stars paſſing pretty deep into the Stone, about a quarter of an Inch in Diameter. The Striæ of theſe are not ſo deep and diſtinct as in the preceding; and in ſome are hardly perceivable. Found ſomewhere in the Road betwixt *Enſham-Ferry* and *Oxford,* where there were more of the ſame; but I cannot remember the Place more particularly.

e. 111. Another Piece from the ſame Place, little different, but that the Stars are generally leſs, and ſmooth, as if the Striæ were effaced, they hardly appearing.

e. 112. A flat Body, with hexagonal Cells ſomewhat above a quarter of an Inch over; and very much reſembling an Honey-Comb. The Cells are prettily crenated or notch'd quite round the Edges; but not ſtriated down to any depth. Theſe Cells are pretty deep; and ſome of them paſs quite thro' the Body diametrically. The Partitions of the Cells, where broken, are white; but all the reſt of the Body is of a ferruginous Colour. Found at the Foot of *St. Vincent's-Rock,* near *Briſtol.*

e. 113. Another with like Cells. The Partitions of theſe are compos'd of little Bullæ or Granules, of a glittering Spar, white, with a Caſt of red. The Cells are all deep; and ſome of them pervade the Body diametrically. Found upon the Shores of the River *Ardin,* near *Leonards-Caſtle-Abbey,* in *Cumberland.*

APPENDIX.

e. 116. An Aſtroites of the foraminoſe kind, *Part* 5. *Sect.* 4. little different either in Subſtance or Texture from that *e.* 105. but this Stone is not quite half ſo big. Found near *Abbington,* in *Berkſhire.* They are pretty common there.

e. 117. *Aſtroites Stellis prominulis,* much like that *e.* 84. only in this the Stars are ſomething larger. Found on *Bullington-Green,* near *Oxford.* It belongs to *Part* 5. *Sect.* 1.

CLASS VI.

Cryſtals, Spars, and cryſtalliz'd Gems.
Vid. *Preface* infra.

The Claſſical Method of theſe Bodies.

PART I.
Incruſtations of Spar, and other like Matter, upon Bodies in Springs, and Rivulets.

PART

PART II.

Simple Spars, found in the perpendicular Fiſſures of the ſolid Strata.

PART III.

Spar form'd into Plates.

SECT. 1. Plates of Spar, plain, concreted upon the Stone of the Sides of the perpendicular Fiſſures.

SECT. 2. Plates of Spar, with *Tubera*, and Efloreſcencies, upon them, concreted upon the Stone of the Sides of the perpendicular Fiſſures.

PART IV.

Stalactitæ, or Spar form'd into the Shape of Icicles.

APPENDIX. Stalagmitæ, Drop-ſtones, or Spar form'd into ſmall roundiſh Maſſes.

PART V.

Cryſtals, and cryſtalliz'd Spars.

SECT. 1. Cryſtals, and Spars, cryſtalliz'd in an irregular Manner.
2. Spars, and Cryſtals, ſhot into a cubic Form.
3. Trigonal Pyramidal Talky Spars.
4. Hexagonal Pyramidal Spars and Cryſtals.
ARTICLE 1. Thoſe that are white, or diaphanous.
2. Thoſe that are colour'd, yellow, red, purple, black.

SECT. 5. Sparry and cryſtalline Pyramids, join'd Baſe towards Baſe by the Interpoſition of an hexagonal Column, adhering to Sand-Stone, diaphanous, and colour'd.

PART VI.

Spars, and Cryſtals, independent, and in Nodules.

SECT. 1. Hexagonal, ſparry, and cryſtalline Pyramids, join'd Baſe towards Baſe by the Interpoſition of an hexagonal Column, not adhering to any other Body, and without a Root.
ARTIC. 1. Thoſe that are ſingle, and apart.
2. Thoſe that are join'd, ſeveral in one Maſs or Nodule.
SECT. 2. Echinated, ſparry, and cryſtalline Balls.
3. Concave, ſparry, and cryſtalline Balls.

PART VII.

Spar of a ſtrigated or ridg'd Form. And Spar ſhot into the Form of Erica or Heath.

The Names given to ſome of theſe Bodies by Writers, and others.

Petrefactions, *f.* 1. *& ſeq.*
Oſteocolla Officinarum, *f.* 5.
Stalactites, or *Stagonites*, *f.* 58. *& ſeq.*
—— hollow'd, or fiſtuloſe, *f.* 55. 57.
—— florid, *f.* 68.
—— cryſtallized, *f.* 65 †.
—— of a red Spar, 66. 67.
Stalagmites, *f.* 47. 72 *. 72 †.
Lapis Lazuli Saturni, *f.* 18.
Cauky Spar, *f.* 76*.

Lac Lunæ Spar, f. 46.
Croylſtone, f. 81.
Pellucid Spar, f. 28.
White Spar, f. 35 †.
Water Spar.
Brown Spar, f. 30.
Brown Sugar-Candy Spar, f. 17.
Rhomboid Spar, f. 18. *& ſeq.*
Dog-tooth Spar.
Botryoid Spar, f. 48. 49.
Echinated Cryſtalline Balls, f. 134. *& ſeq.*
Concave Cryſtalline Balls, f. 142. *& ſeq.*
Cryſtal, f. 99. 100 *.
Corniſh Diamonds, f. 97. *& ſeq.*
Briſtol-Stones, f. 117.
Topaz, f. 177. 177 *.
Saphire, f. 180.
Amethyſt, f. 92. 118. 178. 179.
Emerald.
Selenites, Scheuchzeri, f. 25.
Iris, 129.

Extract *of the Obſervations, relating to the Origin, Formation, and Natural Hiſtory of Cryſtal, Spar, and the cryſtalliz'd Gems.*

Of Spar.

1. *The Uſes of* Spar.

Spar, abſorbing Sulphur, in the Ores of Metal, in the Fire, promotes their Fuſion.
—— incruſted, call'd *Oſteocolla,* uſed as a Conglutinator of broken Bones, *f.* 5.
—— white, given in White-Wine in Caſes of the Stone, and nephritic Affections, *f.* 18. 21.
—— in the Cholic, *f.* 21.

2. *The Place in which* Spar *is found.*

Spar, in Fiſſures of Stone, *f.* 16. 18. *& ſeq.*
—— in Fiſſures of Marble, x *b.* 1.
—— in Fiſſures of Coal, *f.* 9. *g.* 17. *& ſeq.*——Of Canal Coal, *g.* 10.
—— finely cryſtalliz'd on the Sides of the perpendicular Fiſſures of Coal, *f.* 108.

3. *The various Colours of* Spar.

Spar, white, *f.* 18. 20.
—— with a Caſt of yellow, *f.* 76 ⊖.
—— yellow, *f.* 76 †. 94. *& ſeq.*
—— of a reddiſh yellow, *f.* 17.
—— tranſ-lucid, green, *f.* 16. 65 †.
—— blue, *f.* 144.
Stalactitæ, red, out of an Iron Mine, *f.* 66. 67.
Spar, with a Caſt of Purple, *f.* 91.
—— with a black Hue, owing to Coal concreted with it, *f.* 108.

4. *The Conſtitution, Origin, and Formation of* Spar.

The Conſtitution and Formation of *Spar, f.* 28, 29.
Spar, white, breaking in Rhomboids, *f.* 24.
—— pellucid, breaking in Rhomboids, *f.* 25.

Spar, white, breaking in Plates, *f.* 29*.

Sparry Matter, brought out of the Strata of Stone by Water, fix'd in ſucceſſive Incruſtations, and ſpread over the Sides of the perpendicular Fiſſures, *f.* 30, 31, 32, 34, 35, 36, 36*.

Sparry Incruſtations, with Tubera, and Effloreſcencies upon them, form'd by Water on the Sides of the perpendicular Fiſſures, *f.* 36†. *& ſeq.*

Spar grows, and is form'd, to this Day, *f.* 83.

5. *The Conſtitution, Origin, and Formation of the* Sparry Stalactitæ.

Stalactitæ form'd, in the perpendicular Fiſſures, by *Sparry Matter*, brought out of the Strata by Water, *f.* 55. *& ſeq.*

——— form'd at this Day on the Top of Works deſerted under Ground, *f.* 61, 62.

——— on the Top of a Brick Vault, *f.* 63, 64.

6. *Other Minerals, and Ores of Metals, incorporated with* Spar.

Spar, concreted with a yellow ſulphurous Marcaſite, *f.* 91.

—— concreted with Lead-Ore, *f.* 92†. 183. *Vide* Claſs 6.

—— with Copper-Ore.

—— with Tin-Ore.

—— with Iron-Ore.

OF CRYSTAL.

1. *The Figure of* Cryſtal.

Cryſtal. Its natural Form hexangular. When it aſſumes any other Form, that is owing to the Admixture of ſome adventitious mineral or metallic Matter concreted with it. *f.* 97. *Conf. Pref. infra.*

——— in a cubic Form, *f.* 87. *& ſeq.* This Form owing to Lead incorporated with it, *f.* 87. 92†. *n.* 132.

All other Variations of its natural Figure, owing to metallic Mixtures with it. *n.* 132.

2. *The Colours of* Cryſtal.

Cryſtals, clear and diaphanous, *f.* 99. 120. *& ſeq.*

——— with a Caſt of Yellow, *f.* 87. 90†. 116. 128. 141*. *n.* 132.

A Topaz, *f.* 177. 177*.

This yellow Colour is owing to Lead incorporated with it, *f.* 87. 128. *n.* 132.

——— with a Caſt of Green, owing to Copper, *f.* 93†.

——— with a Caſt of Red, owing to Iron incorporated with it, *f.* 117. 118. 126. 129. 131. 138. 145.

——— with a Caſt of Purple, owing to Iron, *f.* 91. 93. 119. 129. 141. *Conf. f.* 118.

——— of an Amethyſtine Colour, owing to Iron, *f.* 92. 92†. 118. 176*.

Amethyſts, *f.* 178, 179.
——— of a deep black Water, *f.* 127. 129.
The various Colours of Gems.

Spars, Cryſtals, *and* Cryſtalliz'd Gems.

PREFACE.

Cryſtal *was thought by the Antients to be only Water congeal'd, in long Tract of Time, into an Ice, harder, and more durable than the common. 'Twas for that reaſon they gave this Stone the very Name* [κρύςαλλος] *that they did to* Ice. Plin. l. 37. c. 2.—"Cryſtallum,—gelu vehementiore concreto. Non alibi certe reperitur, quam ubi maxime hibernæ nives rigent, glaciemque eſſe, certum eſt; unde nomen Græci dedêre."—Sexangulis naſcitur lateribus."——

Spar *is call'd* Fluſs *by the* German *Mineraliſts: and by* Agricola, *and the other late Writers of Foſſils,* Fluor. *Probably becauſe they imagined this alſo to have been form'd,* ex Fluido, *or out of Water. In my* Nat. Hiſt. of the Earth, Part IV. Conſect. 6. &c. *I have ſet forth the true Origin of* Spar *and* Cryſtal: *and ſhewn that Water is only the Agent that educes the Matter, of which they conſiſt, out of the Strata, and compiles and forms it in the perpendicular Fiſſures. Nor are they leſs miſtaken, who imagin'd* Spar *had the Name* Fluor, à fluendo in Igne; *for it will not melt, but calcines in the Fire. 'Tis indeed ſometimes uſed, in the Fuſion of Ores, like Lime, to abſorb the Sulphurs that may be incorporated with them. By that means it removes indeed what would hinder the Fuſion of thoſe Ores, and ſo by accident promotes their Fuſion: but is not really a* Flux *itſelf.*

One ſort of *Spar* is compoſed mainly of *Lac Lunæ,* incorporated with *Cryſtal. Vide f.* 41. *f.* 46. *f.* 70. *&* o. 105. *infra.*

Talc is likewiſe frequently found incorporated with *Cryſtal* and *Spar:* as in *f.* 29*. *&* 29†. *f.* 30. *f.* 34. and probably in the *Stalactites, f.* 55. *& ſeq.*

There is in all *Spar* more or leſs of *Cryſtal:* Which renders it more or leſs diaphanous, in proportion to the Quantity of the *Cryſtal* incorporated with the Earthy, Stoney, Mineral or other Ingredients in the Compoſition of the ſparry Maſs.

Spars, Cryſtals, *and* Cryſtalliz'd Stones.

PART I.

Incruſtations of Spar, *and other like Matter, upon Bodies found in Springs, riſing from among Strata of Stone, or Rocks.* [Confer. Nat. Hiſt. Earth. Part IV. Conſ. 7, & 13.]

f. 1. Three Cylindric Incruſtations, found in a Brook proceeding from *Ruſhbank-Spring*, *Harrington-Grounds*, in *Northamptonſhire*.

Theſe, and the following, to *f.* 5. incluſive, have little *Spar* in their Compoſition; they conſiſting chiefly of a grey light earthy Subſtance; but being found with thoſe that contain more *Spar*, and form'd in the ſame manner, I take the liberty to range theſe with them.

f. 2. Several others, of different Figures, found part of them in a Rivulet, the reſt in a Marl-Pit, in a Field not far from the Church of *Norleach*, *Glouceſterſhire*. Some of theſe, being broken, ſhew the various Cruſts, ſucceſſively one within another. The Straws, or other ſlight Bodies, on which theſe Incruſtations were made, are ſince, in Tract of Time, periſh'd and diſappear'd; the Place, where they were, remaining.

f. 3. The common Garden Snail-Shell incruſted over. Out of the ſame Rivulet, near *Norleach*.

f. 5. An Incruſtation, ſeeming to have been on a Stick, ſince periſhed. This is the *Oſteocolla Officinarum*: which is recommended by the common Pharmacologiſts as an Abſorbent, and Conglutinator of broken Bones; whence it has its Name. Taken out of ſtill the ſame Rivulet.

f. 6. A Land-Snail, incruſted over with a pretty hard fine Stoney Matter, mix'd with *Spar*. Found in that which is called the *Petrifying Spring*, near *Maidwell*, *Northamptonſhire*. I have had ſeveral like Incruſtations from the ſame Spring.

f. 7. Bits of Sand-Stone, Sticks, and other Bodies, incruſted over, and cemented together with a ſlight Stoney Matter with *Spar*. Found in the Head of a Spring in *Chedworth* Town, four Miles from *Cirenceſter*, *Glouceſterſhire*.

f. 8. A light Earthy, Stoney, and Sparry Matter, incruſted and affixed to Oak-Leaves. Found in a Brook near *Brickſworth*, *Northamptonſhire*.

PART II.

Simple Spars *found in the Fiſſures of the ſolid Strata.*

f. 9. Fine white *Spar* in Veins or Fiſſures of Coal; from *Meſſham, Leiceſterſhire.* Conf. *f.* 108. infra.

f. 10, 11, 12, 13. Plates of a grey *Spar,* found in the Veins or Fiſſures of Canal-Coal, at *Haigh, Lancaſhire.*

f. 16. A tranſlucid green *Spar.* From a Fiſſure of the Strata of Stone, in the Copper-Mines, *Croſgill, Cumberland.*

f. 17. A gloſſy, talky, yellowiſh Spar, ſomewhat reſembling brown Sugarcandy. Found in Sir *Ralph Dutton*'s Park, *Sherborn, Glouceſterſhire.*

f. 17*. Another like *Spar,* very ponderous. Found in the Pits of Fullers-Earth, near *Rygate, Surrey.*

f. 18. White *Spar,* from *Charter-Houſe Liberty, Mendip*; found in the perpendicular Fiſſures, both with the Lead, and alone. The Phyſicians thereabouts call it *Lapis Lazuli Saturni*; and uſe it for the Stone in White-Wine, Doſ. ℈ ſs.

f. 19. White *Spar.* From a perpendicular Fiſſure in the great Limeſtone-Pit, *Dudley, Staffordſhire.*

f. 20. *Spar,* white, with a Caſt of brown. *Wooky-Hole,* near *Wells, Somerſetſhire.*

f. 21. *Spar,* almoſt as pellucid as *Cryſtal.* Out of a Lead-Mine at - - - - - - - in *Cumberland.* Here, and in *Yorkſhire,* they uſe this fine and clean *Spar,* powder'd, in the Cholic; as alſo in Nephritic Caſes, taken in White-Wine.

f. 24. White *Spar,* breaking in Rhomboids. From *Workſworth* Lead-Mines in the *Peak, Derbyſhire.*

f. 25. Another Sample more tranſparent and cryſtalline. From the ſame Lead-Mine. I take this to be the *Selenites* of Dr. *Scheuchzer, Geogr. Phyſ.* and of ſome of the *German* Mineraliſts.

f. 28, 29. Two Pieces of a pellucid *Spar,* lineated with black in ſuch manner, as to ſhew the Order and Succeſſion of the Matter in the Formation of the Maſs. From a Lead-Mine, near *Haddon, Derbyſhire.*

f. 29*. White *Spar,* breaking in Plates. Out of a Lead-Vein in *Newlands, Cumberland.*

f. 29†. Like *Spar,* but more ſhattery, and the Plates more apt to part. Out of another Lead-Mine, *Cumberland.*

PART III.

Spar *form'd into Plates.*

SECT. I.

Plates of Spar, *plain, incruſted on Stone on the Sides of the perpendicular Fiſſures.*

f. 30. A thin flat Plate or Cruſt of brown *Spar.* From *Benwell* Coalery, *Newcaſtle.* It was twelve times as broad: and thus thin throughout. It conſiſts indeed of two Plates of *Spar*, a browner and whiter, ſucceſſively apply'd; and ſtriated a-croſs. 'Tis common to find *Spar* of this Conſtitution, ſpread over great Tracts of Stone in the Sides of Fiſſures in Quarrys and Mines.

f. 31. A grey Sparry Cruſt, beat off the Side of a Fiſſure in the Stone of *Pool*'s Hole. *Peak, Derbyſhire.*

f. 32. A whitiſh brown Sparry Cruſt, ſtriated a-croſs, conſiſting of ſeveral thin Incruſtations, and ſhewing the ſucceſſive Application of each to other in the Formation of the Body, by Water running down the Side of a Fiſſure of Stone, on which this Cruſt was form'd and affix'd, in *Llany Monach-Cave*, near *Oſweſtry* in *Shropſhire.*

f. 34, 35. Two Pieces of *Spar*, compoſed of ſeveral Cruſts variouſly apply'd to each other. *Sherborn, Glouceſterſhire.*

f. 35 †. White *Spar*, form'd into thin Plates, placed in very various manners, ſo that they interſect one another, and make Cells of different Forms and Capacities. The Cells have been fill'd with pale brown Earth, part of which is ſtill remaining in them. From a Quarry near *Caple Tar, Devonſhire.* This fine Earthy Matter, coming forth of the Strata with the *Spar*, concurr'd to the forming the common Maſs; but the earthy Corpuſcles not being capable of concreting and conſolidating, as the *Spar* did, remain'd looſe: and when dry, was like a fine Powder, and eaſily diſſipated. There was a great deal of this Sparry Matter, with the Cells thus fill'd with this Earth, in this Fiſſure.

f. 35*. Like *Spar*. *Uppingham, Rutlandſhire.*

f. 36. A whitiſh Sparry Cruſt, with ſemi-lunar Proceſſes on the Surface of it, owing their Form to the dribling of the Water that paſſed over it. The Convex of the Arches of theſe Proceſſes hung downwards. From a Quarry near *Turk-Dean, Glouceſterſhire.*

f. 36*. *Spar*, flat: with a Caſt of Yellow; conſiſting of numerous thin Incruſtations ſucceſſively caſt, by Water, each on other, very much like the *Spar* that compoſes the Septa or Partitions of the *Ludus Helmontij* that is found in *Sheppey Iſland. Harwich-Cliff.*

PART III. SECT. II.

Plates of Spar, *with Tubera and Efloreſcencies upon them, incruſted on the Sides of the perpendicular Fiſſures of the Strata of Stone.*

f. 36 †. A large Knob, ariſing from a Plate of *Spar*, incruſted on the Side of a perpendicular Fiſſure in *Yanworth* Quarry, *Glouceſterſhire.*

f. 36*. Two large oblong Tubera, ariſing from a Plate of *Spar*, incruſted on the Side of a Fiſſure of Stone in *Rancomb-Park, Glouceſterſhire.*

f. 37. A greyiſh brown Tuberous *Spar*. Out of a Fiſſure of a Stone-Pit, on the Road juſt by *Finchead-Abbey. Northamptonſhire.*

f. 38. Another. *Wooky-Hole*, near *Wells*, *Somerſetſhire.*

f. 39, 40. Yellowiſh Effloreſcent Sparry Incruſtations on Stone, on the Side of a perpendicular Fiſſure of a Quarry near *Yanworth*, *Glouceſterſhire.*

f. 41. A Body conſiſting of *Spar*, with ſome *Lac Lunæ*, found frequently in theſe Quarrys, incorporated with it. 'Tis finely imbelliſh'd with Tubercles and Effloreſcencies. Out of a Fiſſure of a Quarry near *Norleach*, *Glouceſterſhire.*

f. 42. Another, not much different. Out of a Fiſſure of a neighbouring Quarry.

f. 42*. A ramoſe Effloreſcence, of a fine white *Spar*, found hanging from a Cruſt of like *Spar*, at the top of an old wrought Cavern in one of Mr. *Bathurſt*'s Lead-Mines on *Molderſide-Hill*, in *Arkendale*, *Yorkſhire.* There was Water, trickling down thence, by means whereof this was form'd. Its Formation muſt have been recent, and ſince that Cavern was made.

f. 42 †. A Tuberous Effloreſcence, of a fine white *Spar*, found adhering to a Cruſt of like *Spar*, on the Side of a Fiſſure in a Lead-Mine, at - - - - - - in *Cumberland.*

f. 43, 44. Two white Sparry Incruſtations, with Effloreſcencies, in Form of Shrubs upon each, form'd by the trickling of Water in the Fiſſure of a Stratum of Stone, to the Sides of which they, with many more of the like, adher'd. Out of the ſame Quarry with the laſt.

f. 45. Another, very thick ſet with Sparry Effloreſcencies. The ſame was continued over the Side of a Fiſſure, to the Extent of 3 or 4 Foot. *Yanworth-Quarry*, *Glouceſterſhire.*

f. 46. Another, with like Effloreſcencies. This is extremely light, and is compos'd chiefly of that Matter which Dr. *Plot*, and ſome other Naturaliſts, call *Lac Lunæ*, incorporated with a little *Spar.* Found in a Fiſſure of a Quarry on the Weſt-Side of *Oundle*, a quarter of a Mile from the Town. *Northamptonſhire.*

f. 50. A brown Sparry Effloreſcence, near Sir *Chriſtopher Muſgrave*'s Houſe by *Kirkby-Steven*, *Weſtmorland.*

f. 52. Very luxuriant Effloreſcencies of a brown *Spar*, made by Water, at the foot of a Hill under a Hollow of an old Aſh in *Maidwell-Dale*, *Northamptonſhire.*

f. 53. From *Knaresborow*, *Yorkſhire.* Out of that call'd the *Petrifying Spring* there.

f. 53*. A Piece of the Stoney Accretion on the Walls of Bath, mention'd by Dr. *Guidot*, *de Thermis Britan.* *p.* 165. In ſeveral Parts of the City-Walls of *Bath*, in a Garden on the South-Weſt Side of the Town, are Stoney Accretions, and ſome pretty hard. They increaſe, and are inlarg'd daily: and conſiſt only of the arenaceous Matter that is beat down by the Weather from the upper Stones; which, falling upon the lower, is concreted and affixed upon them, by means of the interpoſing of a little Sparry Matter that drains out of the upper Stones: or rather, out of the Earth on the Inſide of the Wall; which is ſeveral Foot higher than that on the Outſide in the Garden. Where the Stones in the Wall, above, are not fretted, and the Sand beat off, theſe Accretions are no where found. Nor are they every where found, where the Sand is beat off above: but only where there are Jets in the Stone, for the falling Sand to ſettle upon, or where the Wall bulges out to receive it. And 'tis obſervable, that the largeſt Accretion is at a kind of Angle of the Wall, which is much expos'd and worn by the Weather, and where there is a Bulge near the Ground. I ſhow'd this to Dr. *Guidot*, and he aſſents to theſe Conjectures about the Formation of theſe Accretions.

PART IV.

Stalactitæ, *or* Spar, *form'd by the dropping of Water, in Fiſſures, and ſubterraneous Caverns, into the Shape of Icicles.*

f. 55. Part of a *Stalactites* of a Cylindric Shape, and about an Inch in Diameter; having adhering to it a Piece of the Stone from whence it hung in the Fiſſure of a Quarry at *Windruſh, Glouceſterſhire*. 'Tis fiſtulous, having a Foramen at the Axis for the whole length of it. 'Tis ſtriated from the Surface to the Foramen: and is compos'd of many thin cylindric Cruſts, induced each on other ſucceſſively, by the Fall of Water, bringing *Spar* with it out of the Strata.

f. 56. A *Stalactites*. *King's-Weſton, Glouceſterſhire*. This was near two Foot long: of much the ſame Conſtitution with the former; but not fiſtulous.

f. 57. A *Stalactites*. From a Lead-Mine, at *Hopton* in the *Peak, Derbyſhire*. This is of a fine white *Spar*, has a Fiſtula at the Axis, to which the Striæ tend, and which the Cruſts ſurround: and is much of the Shape of the *Belemnites fuſiformis*; but larger, being a Foot in length.

f. 58. A *Stalactites*, of like *Spar*, but ſmaller, and not fiſtulous; having adhering to it part of the Stone, of the Side of the Fiſſure, from whence it hung during its Formation. From the ſame Lead-Mine, at *Hopton*.

f. 59. Another, of like *Spar*. This has a Fiſtula, not at its Axis, but to one Side; to which all the Striæ tend. From the ſame Lead-Mine.

f. 61, 62. Two fine ſlender *Stalactitæ*, found hanging down from a black Stone, at the top of an old deſerted Vault, in *Benwell* Coalery, *Newcaſtle*. They were form'd ſince the Vault was made, and are a Proof that theſe *Stalactitæ* are form'd to this day.

f. 63, 64. Two very light, thin, fiſtulous *Stalactitæ*, found hanging down amongſt others, in great number, from the Top of a Brick Vault, between the Gardens at *Cliveden-Houſe*, near *Maidenhead, Bucks*. Theſe afford another inconteſtible Proof of the preſent Growth of the *Stalactitæ*.

f. 65. A ſmall *Sparry Stalactites.* From the Devil's Arſe in the *Peak.*

f. 65*. Four *Stalactitæ*, of Conſtitution much like that of *f.* 55. only the *Spar* is ſomewhat whiter, and more tranſparent, found hanging down from a Jet of a main Vein in a Lead-Mine, in *Arkendale, Yorkſhire.* They hung near each other: and grew till they became contiguous, and united.

f. 65†. Two *Stalactitæ*, having their exterior Surface ſet all over with ſmall Cryſtals. The larger being broken, ſhews the interior *Spar*, of which it conſiſts, to be of a green Hue. Out of another Lead-Vein, *Arkendale.*

f. 66, 67. Two ſmall red *Stalactitæ.* Out of an Iron-Mine, near *Cloverwall*, in the *Foreſt of Dean, Glouceſterſhire.*

f. 68. A white *Sparry Stalactites*, with a fine Sparry Eﬄoreſcence at the Top of it. From *Benwell-Coalery*, near *Newcaſtle.*

f. 70. A white *Spar*, with two Proceſſes of *Stalactitæ* hanging down from it. Out of a Fiſſure in *Yanworth-Quarry, Glouceſterſhire.* Here are ſome Appearances of *Lac Lunæ* in this: as indeed there is in much of the *Spar* of the Country hereabouts.

APPENDIX.

Stalagmites, Drop-Stones, *or* Spar *form'd into ſmall roundiſh Maſſes.*

f. 72. White *Sparry Stalagmitæ. Wookey-Hole*, near *Wells, Somerſetſhire.* They lay on the Floor, but ſeem to have been Eﬄoreſcencies fallen down from the Sides of this Grotto.

f. 72†. Four grey *Sparry Stalagmitæ. Elden-Hole, Peak, Derbyſhire.*

CLASS VI. PART V.

Cryſtals, *and* Cryſtalliz'd Spars.

SECT. I. *Spars cryſtalliz'd in an irregular manner.*

f. 73. White *Spar*, ſemipellucid, conſiſting of flattiſh Pieces, ſet edgeways each by other. There was a great Quantity of this *Spar*, about 6 Foot deep, in a Quarry near *Pickering, Yorkſhire.*

f. 74. Like *Spar*, but the Pieces leſs. From a Stone-Pit near *Oundle, Northamptonſhire.*

f. 76x. Like Spar, out of a perpendicular Fiſſure of a Lead-Mine, *Arkendale, Yorkſhire.*

f. 76*. White Spar ſhot into ſmall Columns, *Wooky-Hole*, near *Wells, Somerſetſhire.*

f. 76 ⊙. Like Spar, but with a Caſt of yellow, and Sparks of Lead-Ore. From a Lead-Vein, *Newlands, Cumberland.*

f. 76 ++. Spar, brown, columnar, in three Orders or Cruſts, one on another. From the Marble Quarry at *Caddown*, near *Plymouth.*

f. 76 †.

f. 76 †. Spar, columnar, yellow, with part of the Stone, of the ſide of the Fiſſure, whereon it concreted, adhering to it. From *Hartly* Lead-Mines, *Weſtmorland.* This ſort is not near ſo frequent here as the cubic is.

f. 76 ·X·. A white, opake, cauky Spar, ſhot or pointed. *Hinxton, Cornwall.*

f. 76. ♀. White columnar Spar. Out of a Stone-Pit near *Sherborn, Glouceſterſhire.*

f. 77. White Spar, found in the Fiſſure of a Quarry near *Stroud, Glouceſterſhire.* The Shoots ariſing from each ſide of the Fiſſure, obliquely, met and united in the middle.

f. 78. Out of a Quarry near *Sherborn, Glouceſterſhire.* There's part of the Stone of the ſide of the Fiſſure, whereon it concreted: There are in this Stone numerous Fragments of Shells, and Pellicles of the Ova of Fiſhes. The Shoots of the Spar ſeem to be trigonal: and if ſo, this belongs to *Sect.* 3. *infra.*

f. 81. Spar, irregularly cryſtalliz'd in ſmall Sparks: and call'd *Croyl-Stone.* From *Workſworth* in the *Peak, Derbyſhire.*

f. 82. Spar, from the ſide of a Fiſſure, ſhot into round Tubercles, ſomewhat larger than Peas, with their Surfaces ſet all over with ſmall Cryſtals. *Portland* great Quarry.

f. 83. Spar, part ſhot into very ſmall Cryſtals: part into Tubera and Efflorеſcencies in a very uncommon manner; ſtruck off the Top of an antiently wrought Cavern of a Lead-Mine, of Mr. *Bathurſt*, on *Molderſide-Hill. Arkendale, Richmondſhire.*

CLASS VI. PART V.

SECT. II. *Spars, and Cryſtals ſhot into a Cubic Form.*

Androdamas * *Plinij.*

f. 87. Cryſtal, ſhot into Cubes, about $\frac{1}{3}$ of an Inch in Diameter. They are tranſparent, excepting a Caſt of Yellow that appears in all of them. They were found concreted together in great numbers on the ſide of a perpendicular Fiſſure in a Lead-Mine, near *Kirby-Stephen, Weſtmorland.*

f. 88. *88. Two larger Cubes, with others leſs. From the Lead-Mines of Sir *Chr. Muſgrave*, at *Hartly Caſtle, Weſtmorland.*

f. 90. Two Cluſters of Cryſtalline Cubes. Alſo four ſingle Cubes; from the ſame Mine.

f. 90†. A Cluſter, larger to an Inch in Diameter; with a Caſt of Yellow. *Hartly-Caſtle* Lead-Mines, *Weſtmorland.*

f. 91. Cubic Spar, with a Caſt of Purple: and ſome Grains of a yellow ſulphurous Marcaſite. From the Lead-Mine at *Nent-Head* in *Cumberland.* Theſe Cubes have probably, with the Lead, which determined the Cryſtal to ſhoot into Cubic Figures, an infinitely ſmall Admixture of Iron, to which the purple Hue is owing.

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* “ *Androdamas Argenti Nitorem habet, ut Adamas, quadrata,* “ *ſemperq; Teſſellis ſimilis.*” Plin. L. 37. c. 10. p. 740.

f. 92. A large Cube of a brighter Amethyſtine Colour, from *Red-Groves*. Lord Biſhop of *Carliſle*.

f. 92 †. Several Cubes of an Amethyſtine Hue, cryſtalliz'd confuſedly together. From the Lead-Mines of *Croſsfells*, *Cumberland*. Out of a Lead-Vein: and there are Maſſes of Lead-Ore, in the part, whereon theſe Cubes are cryſtalliz'd.

f. 93. Several ſmall Cubes, very fine, ting'd with a ſlight Purple. From a Vein of Iron-Ore in the *Skrees*, *Cumberland*.

f. 93 †. Small Cubes, very fine, ſome ting'd Green. From a Vein of Copper-Ore in the *Skrees Mountain*, *Cumberland*.

CLASS VI. PART V.

SECT. 3. *Trigonal*, *Pyramidal*, *Talky* Spars.

f. 94. Spar of a yellow Hue, ſhot into numerous trigonal pointed Shoots of various Sizes; found growing to one ſide of a perpendicular Fiſſure of a Stratum of Freeſtone in digging, for laying a Foundation for Sir *J. Guiſe's* Houſe at *Randcomb*, *Glouceſterſhire*. On one ſide of this appear ſeveral trigonal Surfaces, which perhaps are the Baſes of the trigonal Shoots. This ſort is alſo found in *Swizzerland*: Dr. *Scheuchzer* calls it *Fluor Cryſtallinus trigonus*. *Specim. Lithogr. Helvet.* p. 29.

f. 95. Leſſer trigonal Shoots of a yellow Spar. Out of the great Quarry in *Portland*.

f. 96. Others, not quite ſo yellow. *Fairford*, *Glouceſterſhire*.

CLASS VI. PART V.

SECT. 4. *Hexagonal Pyramidal Spars*, *and Cryſtals*.

ART. 1. *Thoſe which are white or diaphanous.*

f. 97. Hexangular Sprigs or Shoots of Cryſtal of various Sizes, ſome clear, others a little ſoil'd, with an Accretion of Tin, riſing out of a white Spar, which was affix'd on the ſide of the Stone in a perpendicular Fiſſure, in *Carrack-Glooſe* Tin-Mine, *Cornwall*. They grew on the ſides of the Load of Spar, which ſtands parallel to that of Tin-Ore. They are commonly found in great Numbers in Caverns of the Spar. The People there call them *Corniſh Diamonds*. There is much Water in the Load of Spar and Ore. This Hexangular, is the natural Figure of Cryſtal. When it aſſumes any other, that is owing to the admixture of ſome adventitious mineral or metallic Matter concreted with it.

f. 98. A ſingle Column, or Shoot, very large, being three Inches in Length; and 1 and $\frac{1}{2}$ in Diameter near the Baſe. From the ſame Fiſſure.

f. 99. Five others, not ſo large; but, excepting the Soil on the Surface, moſt of them near as tranſparent as the Alpine Cryſtal. From the ſame Fiſſure.

f. 100. Part of a large hexangular Sprig, with Bodies in it, black, ſlender, round, and very much like Hairs. *Hinxton, Cornwall.* Theſe Bodies are, doubtleſs, compos'd of Tin, which aſſumes that black Colour when cryſtalliz'd.

f. 100x. Part of another, broke ſo as to ſhew the internal Conſtitution of it, which is much like that of the Marcaſite, *i.* 44. *infra.* From the ſame Tin-Mine as the precedent.

f. 100†. Several Sprigs of Cryſtal, of different Sizes, from a perpendicular Fiſſure in *Carrack-Glooſe* Tin-Mine, *Cornwall.*

f. 100*. Others, more tranſparent, than thoſe found in the Tin-Veins; from *Tindagial, Cornwall.* Theſe were found with Spar, in a perpendicular Fiſſure, in the Slate Quarry at *Denny-Bowl, Cornwall.*

f. 100 ++. Two Cryſtal Sprigs or Columns, and part of two others, croſſing one another at diverſe Angles. During the Time of their Formation part of the Matter, which compos'd each, being within the Verge of the Matter of the other, the Columns were incorporated with, and lock'd into each other. The like Accident is obſervable in ſome of thoſe, *f.* 97. & *f.* 100†. From a perpendicular Fiſſure in *Carrack-Glooſe* Tin-Mine, *Cornwall.*

f. 101. Part of an hexagonal Shoot of white Spar, very fair. Out of a Lead-Vein, at - - - - - in *Wales.*

f. 102. An hexagonal cryſtalline Shoot, with black Lines in it. From St. *Vincent*'s Rock. Being broke, in one Part, it ſhews ſomewhat of the Texture of the Stone, and the manner of its Concretion.

f. 103. Three Shoots, out of a Fiſſure in St. *Vincent*'s-Rock. *Briſtol.*

f. 104. A Maſs with large Pyramids. From a Lead-Mine, at *Caſhborne, Cumberland.*

f. 106. Found on the Waſts, between *Alſton-Moor*, and *Galmesby, Cumberland.*

f. 108, 109. Spar, on Coal, finely cryſtalliz'd. From *Farrington* Coal-Pits, *Somerſetſhire.* In ſome of the Cryſtals there appears a fine black Matter, probably ſome fine Parts of the Coal, incorporated with the Cryſtalline.

f. 112. Spar, cryſtalliz'd, with part of the Stone whereon it concreted, on the ſide of a Fiſſure, in a Quarry, near *Cheltenham, Glouceſterſhire.*

f. 113. Hexagonal cryſtalline Shoots, ſmall, but very ſparkling. Out of the Fiſſure of a Quarry by *Keynſham, Somerſetſhire.*

f. 114. A Cluſter of cryſtalline Shoots, very beautiful. Out of the Fiſſure of an Iron-Mine, near *Cloverwall*, in the Forreſt of *Dean, Glouceſterſhire.*

f. 114x. Hexagonal cryſtalline Shoots, with part of the Stone, of the ſide of the Fiſſure whereon they grew, near *Bangor.* Sent me by the Lord Biſhip of that Dioceſe.

f. 114 †. Found in a Vein, along with the Iron-Ore. o. 90. in the *Skrees, Cumberland.*

f. 114*. In a Fiſſure of a naked Rock, *Newlands, Cumberland.*

f. 114 ++. A Shoot of Spar, hexagonal; with hexagonal Lines, one within another, at the Baſis where 'twas parted from the Rock to which it grew; ſhewing the Order and Manner of the ſucceſſive Application of the conſtituent Matter of every ſide of the Body at the ſame time, in its Formation. Found near the River *Palmer*, *Cornwall.*

CLASS VI. PART V.

SECT. IV.

ART. 2. *Hexagonal Pyramidal Cryſtals, and Spars colour'd, Yellow, Red, Purple, Black.*

f. 115. A Cluſter of Hexagonal ſparry Shoots, of a browniſh Hue. Out of a Fiſſure of a Stratum, in a Stone-Pit, near *Farmington, Glouceſterſhire.*

f. 116. Others, yellow. Out of the Fiſſure of a Quarry, near *Sherborn, Glouceſterſhire.*

f. 117. Others, with a Caſt of Red, and in ſome Parts black, concreted on a Cruſt of Iron-Ore. From a Fiſſure in St. *Vincent*'s Rock, by *Briſtol.*

f. 118. Others, with ſome of the Cryſtals Red, others Amethyſtine; concreted on a Cruſt of Iron-Ore, growing on the ſide of a perpendicular Fiſſure in St. *Vincent*'s Rock, *Briſtol.* Thoſe different Colours are owing to the different Proportions of ferreous Corpuſcles uniting with the Cryſtalline in the Concretion.

f. 119. Others, white, tranſparent; but ſome of them with a very ſlight Tincture of Purple. From - - - - in *Cumberland.*

CLASS VI. PART V.

SECT. 5. *Pyramids, ſome diaphanous, others colour'd, Hexagonal, join'd Baſe towards Baſe, by the Interpoſition of an hexagonal Column, adhering to Sand-Stone.*

f. 120. 121. In theſe two the Cryſtals are very clear, and diaphanous, from an Iron-Vein or Fiſſure, in St. *Vincent*'s Rock, *Briſtol.*

f. 123, 124. Two others, the Cryſtals little different from the preceding; out of an Iron-Vein, at *Stainton*, in *Fourneſs.*

f. 126. Another, with Iron-Ore adhering to it. Out of the ſame Vein. Some of theſe are ting'd red, by Iron Particles, concreting with the Cryſtalline, in the Formation of the Stone.

f. 127. Another, out of an Iron-Vein in St. *Vincent*'s Rock, *Briſtol.* The Cryſtals in this are of a fine deep black Water.

f. 128. Another, the Cryſtals ſmall, but very brilliant and fair; ſome of them white and pellucid, but much the greater number of a bright yellow; form'd on Iron-Ore. But the yellow Tincture, being owing to Lead, ſhews Particles of this Metal had incorporated with the Cryſtalline. Nor can that be thought ſtrange in a Country where Lead-Ore is ſo frequent and obvious.

f. x 128. Another, found in a perpendicular Fiſſure of a Stratum of Stone in *Langron* Iron-Mine, *Cumberland.*

CLASS VI. PART VI.

Spars, and Cryſtals, found looſe, independent, and in Form of Nodules.

SECT. I. *Hexagonal ſparry and cryſtalline Pyramids join'd Baſe towards Baſe by the Intervention of an Hexagonal Column, not adhering to any other Body, and without, what the Lapidaries call, a Root.*

ARTICLE I.

Thoſe that are ſingle, and apart.

f. 129. Seven of theſe Bodies ſingle, diaphanous, white, purple, red and black. All found about *Kings-Weſton, Glouceſterſhire. Vid. variarum Iridum Icones ap. Aldrov. Muſ.* p. 941. & 942. &, *inter cæteras, Iridis nigræ, in Agro Senenſi natæ. Conf.* p. 939.

ARTICLE 2.

Thoſe that are join'd, ſeveral in one Nodule.

f. 130. Many, join'd in a very fair Cluſter, very bright and pellucid, *King's Weſton, Glouceſterſhire.*

f. 131. 132. 133. Three Cluſters, *King-Weſton.* Theſe have a Caſt of Red.

SECT. 2. Echinated Cryſtalline *and* Sparry Balls.

PREFACE.

There are ſometimes found in the Chalk-Pits of Kent *and* Surrey Pyritæ *thus echinated. See the 2d Addition of Native* Engliſh *Foſſils.* N° 1. *& ſeq. Vid.* etiam Pyritem æroſum ſubrotundum echinatum. Joh. Bauhini de Fonte Bollenſi, *l.* 4. *p.* 53.

f. 134. A Body of an orbicular Shape, thick ſet round, on all Parts of its Surface, with cryſtalline hexagonal Pyramids, *Kings-Weſton, Glouceſterſhire.*

f. 135. Another, ſomewhat larger. *Ibid.*

f. 136. Another, ſcarce half ſo big. *Ibid.*

f. 137. Another. *Ibid.*

f. 138. Four, ſtill leſs; white, with a Caſt of red. *Ibid.*

f. 139. Another, found on Plough'd Lands, upon *Coteſwold* Hills near *Rancomb*, *Glouceſterſhire*.

f. 141. Part of a large Cube of purple Spar, cover'd with a Cruſt of white, ſemipellucid, cryſtalliz'd Spar. From *Caſhbourn* Lead-Mines, *Cumberland*.

f. 141*. Part of a leſs Cube, ting'd with yellow, and cover'd with a Cruſt of cryſtalliz'd Spar, very bright and ſparkling; found in a Fiſſure among the Ore in that they call the Silver-Mine at *Beer-Alſton*, *Devonſhire*.

SECT. 3. Concave cryſtallin Balls: *or* Nodules *with* Spar *and* Cryſtal *within them.*

PREFACE.

Alonſo Barba *of Metals*, l. 1. c. 15. *mentions a ſort of Stone in* Peraguay *and* Buenos Ayres, *lying* 2 *Fathom deep, which they call* Coco's, *becauſe reſembling the* Coco-Nut. *They are hard, heavy, and about as big as a Man's Head. On the Inſide of them grow* Amethyſts. *Theſe* Coco-Stones *ſeem to be of the ſame Sort with thoſe of this Section.*

f. 142. An orbicular Body, conſiſting of a ruddy ſparkling Spar, full of large Pores. 'Tis of about the bigneſs of a Wallnut. From *Flatholms*, an Iſland in the River *Severn*.

f. 143. A Piece of a much larger. From the ſame Place.

f. 144. A Piece of another, conſiſting of an outer Cruſt of ruddy talky Spar, and of blue, talky, foliaceous Spar, within. From *Barry*, on the Weſt ſide of *Severn*, in *Glamorganſhire*. There is a larger one of this kind upon the Top of the Cabinet. Copper concreting with Spar, and Cryſtal, imparts a blue to them. Of this there are Inſtances in the Veins of Copper-Ore.

f. 145. A Nodule, orbicular, near 3 Inches in Diameter, concave, the Cruſt without ferruginous, within Sparry, with a Caſt of red, $\frac{1}{3}$ of an Inch in Diameter, the inſide lined with a cryſtalliz'd ſparkling Spar. Found in a red Earth, in which was a Mixture of Iron, at *Abſon* in *Glouceſterſhire*, not far from *Bath*.

f. 146. A Segment of a much larger, the Cruſt of a ruſt-like ferruginous Hue; the inſide thick ſet with large hexagonal cryſtalline Pyramids. There are ſeveral more of theſe upon the Cabinet. They are found of all Sizes to the Bigneſs of a Horſe's-Head, in *Clack-Mill-Field*, at *King's-Weſton*, *Glouceſterſhire*; two Foot deep in the Earth, over looſe rubble Stones.

f. 147. 148, *&c.* to 176, incluſively, are Parts of like concave Nodules or Cryſtals broke out of them, to ſhew the various Cryſtallizations, the various Colours, and Sizes of the Cryſtals. All from the ſame Place.

f. 176*. Spar, ſhot upon the Stone at the ſide of a perpendicular Fiſſure, 60 Foot deep, in *Warren*'s Works, *St. Nyots, Cornwall.* The Root or Part that was next the Stone is white: the Tips of the Shoots all of an Amethyſtine Hue.

f. 177. A Topaz, or Shoot out of a Ball like the foregoing, cut and ſet into a Ring. *Kings-Weſton, Glouceſterſhire.*

f. 177*. Another Topaz. Out of a like Stone. From the ſame Place.

f. 178. Four Stones, cut and poliſh'd, out of a concave Ball from the ſame Place. They are of the Colour of the Amethyſt.

f. 179. A Stone, cryſtalline, deep, and with a pretty good Water. It has a fine ſoft Amethyſtine Tincture; but not equal, and alike throughout. 'Tis cut and ſet in a gold Ring. Out of a like concave Ball. *Ibid.*

CLASS VI. PART VII.

Spar *of a ſtrigated or ridged Form.* Spar *ſhot into the Shape of* Erica *or* Heath.

Fluor Strigatus.
Fluor Ericæformis.

f. 181. This was Part of a Maſs of the Bigneſs of a Man's Head, and moſt of the Shoots were thus large. This and the 6 following were found amongſt various other ſorts of Spar, in a large Vein of Lead-Ore, about 30 Fathom deep, in one of Mr. *Bathurſt's* Mines in *Arkendale, Yorkſhire.* I never ſaw any of either the ſtrigated or Ericæ-form, in any other Place. 'Tis heavy as indeed all the reſt are, and doubtleſs hold one of the white Metals, Lead, Tin or Silver.

f. 182. *Ibid.*

f. 183. There are ſome Sparks of Lead-Ore adhering to the Root of this. *Ibid.*

f. 184. *Ibid.*

f. 185. In this the ſtrigated Spar is form'd upon the Tops of the *Ericæformis*; of which I ſaw ſeveral other Inſtances from this Mine.

f. 186. *Fluor Ericæformis. Ibid.* This alſo is pondrous, and doubtleſs has Lead, or ſome other white Metals incorporated with it.

f. 187. *Fluor Ericæformis*, ponderous as the precedent. *Ibid.*

APPENDIX *to* CLASS VI.

Vein-Stones, *or Bodies conſiſting of Spar, earthy Stones, or other Matter ever of fine Conſtitution, found lodg'd in the Veins, or Perpendicular Fiſſures of the Strata along with the Ores of Metals and Minerals.*

Of Earths, Umbres and Ochres, found in the Metallic Veins. vid. Claſs 1.

Of Stoney Matter, Marble, Micæ, found in the metallic Veins. vid. Claſs 2. *and* Claſs 4. Part 1.

Vein-Stones.

+ *f.* 1. A Maſs, white, with a Caſt of Green, having externally a red Soil upon it very much reſembling the *Corniſh* Steatites, only 'tis of the hardneſs of Alabaſter. Out of a perpendicular Fiſſure in the Lead-Mines, *Dunfell, Weſtmorland.* Dr. *Nicholſon,* Lord Biſhop of *Carliſle.*

+ *f.* 2. A ſtoney Maſs, grey, with a Caſt of purple; having in it Spar purple and grey, Specks of a black Mineral, and ſome ſmall Sparks of Lead-Ore. Out of a Fiſſure of the Lead-Mines of . . . . . . in *Derbyſhire,* where 'tis called *Toſtan.*

+ *f.* 3. A dusky, grey, ſtoney Maſs, ſmooth and fine, much like the Shiver of the North. Found in the ſame Fiſſure with *i.* 40. near *Buttermere* in *Cumberland.*

+ *f.* 4. A ſtoney Maſs, of a deep brown Colour, with a Caſt of red. Found in a ſmall Fiſſure, which is a String of the grand Vein in which the Wadd lies, in *Borrowdale, Cumberland.* The Place out of which this was taken was at the Diſtance of about 20 Foot from that Vein.

+ *f.* 5. A Body porous and ſtringy, black with a Caſt of red. 'Tis more ponderous, ſeeming to have ſomething of Iron in it; otherwiſe, as to its Conſtitution, it exactly reſembles the white Pumice found on the Top of *Pico Teneriffe,* being porous, and fibrous, and the Fibres woven with each other in the manner of that. From . . . . . . in *Cornwall.*

+ *f.* 6. Another, of a pale ruſt Colour, with the Surface tuberous and uneven, porous and very light. Found in a perpendicular Fiſſure in a Quarry near *Lancegloſs, Cornwall.*

+ *f.* 7. A Pumice, black, light and porous, found in the ſame perpendicular Fiſſure with the precedent. This ſort is frequently found at the Top of the Veins or Loads of Tin in *Cornwall.* It looks exactly like a Cynder or Scoria that has paſs'd the Fire: and on one Side it has upon it a Cruſt that appears as if 'twas vitrified. It very much reſembles the black Pumice found in the Iſland of *Teneriffe.*

+ *f.* 8. A Maſs, partly ſtoney and partly caukey, of a pale brown Colour. There is a Thread of Led-Ore runs through one part of it. Out of the ſame Vein in which the Shot-Lead-Ore, N^{o} 120. *infra* was found in *Arkendale.*

+ *f.* 9. Another, part ſtoney, white, with Spots of black, part of white Spar. Out of a String, or ſmall Fiſſure, of the *Skrees, Cumberland.* This has the Appearance of a Marble.

+ *f.* 10. Spar, white, with Veins of green, and ſome Sparks of Marcaſite. From Mr. *Courtney*'s new Copper-Mine, in the Pariſh of *Molland*, near *South-Molton, Devonſhire.* This ſeems to hold about $\frac{1}{10}$ Copper.

+ *f.* 11. Spar, white, brown, and green, with ſome ſmall Sparks of Lead-Ore. From the *Skrees, Cumberland.*

CLASS VII.

Bituminous Foſſils.

PART I.

Thoſe that are of a more lax and coarſe Conſtitution, and yield a groſſer or pitchy Matter when heated. 1. *Lapis Piceus*, or Pitch-Stone. 2. *Lapis Ampelites, Obſidianus*, or Canel. 3. *Lithonthrax*, or Coal.

PART II.

Thoſe that are of a more denſe, and fine Conſtitution, and yield an Oil.

Sect. 1. Gagates Jet.
2. Electrum, Succinum, Amber.

CLASS VII.

Bituminous Foſſils.

PART I.

Thoſe that are of a more lax and coarſe Conſtitution, and yield a groſſer or Pitchy Matter when heated. Lapis Piceus, or *Pitch-Stone.* Lapis Ampelites, Obſidianus, or *Canel.* Lithonthrax, or *Coal.*

g. 1. *Lapis Piceus*, the Pitch-Stone; found near *Bentel* in *Shropſhire.* Of this Stone, with the Method of extracting the Pitch forth of it, ſee *Obſ. relating to the Nat. Hiſt. of Minerals, p.* 1. This I broke off a large Piece, that was flat, 3 Inches thick, and appear'd to have been part of a Stratum. *Conf. r.* 6, & 7. *infra.*

g. 2. A Bituminous Plate, compos'd of Cruſts, alternately yellow and black, form'd by Water driveling and incruſting on the outſide of the Gin-Pump of *Moſtyn* Coal-pits. *Flintſhire.*

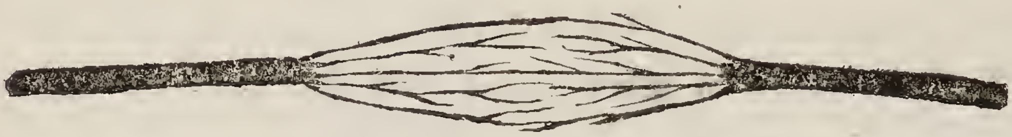
g. 10. Coal, very black, fine and hard, ſo as to take a pretty good Poliſh. This is the *Ampelites* of the Shops, the *Lapis Obſidianus* of ſome late Writers, and is called Canal Coal at *Haigh* in

Lancaſhire, where this was got. There are, in ſome ſmall Fiſſures of it, thin Plates of a greyiſh Spar.

g. 15. Coal, from *Benwell* near *Newcaſtle* upon *Tine*. There are in it Flakes of a ſhining, yellow, ſulphurous Marcaſit.†

The chief Ingredients of Coal are an Ochre and Bitumen. *Conf. a*. 77. *ſupra g*. * 20. *infra*.

g. 16. A brown gritty Stone, with ſmall Spangles of a white ſilvery Talc in it. From *Branſty-Brow* near *Whitehaven*. There are in the Cliff out of which this was taken ſeveral Layers of Coal and Stone of this ſort lying alternately; and I obſerved a Termination of a *Seam*, as they call it in the North, or a Stratum of Coal, where it divided into ſeveral thin Plates, the Meaſure of the Aggregate of all which amounted to the whole thickneſs of the ſaid Stratum. They paſs'd on thus for about 7 or 8 Yards where moſt of them (for ſome broke off ſhort, and did not paſs quite through) run again into a Stratum of Coal of like Subſtance and the ſame thickneſs with the former. This Piece ſhews ſome thin Plates of the Coal in it, and I have underneath given a ſlight Adumbration or Sketch of the Thing as it was in the Cliff.



g. 17. Coal, ſhatter'd and thick ſet with Veins of white Spar. From a Coal-pit at . . . . . near *Newcaſtle*. See Samples of Coal from *Farrington* Pits, *Somerſetſhire*, with Veins of Spar, and Spar ſhot into Cryſtals, *f*. 108, & *f*. 109. *ſupra*.

CLASS VII. PART II.

Thoſe that are of a more denſe and fine Conſtitution, and yield an Oil.

SECT. I. Gagates, Jet.

g. 30. A Piece of Jet, very fine and black, with Impreſſions of *Ammonitæ* upon it.‖ From *Whitby*, *Yorkſhire*. This Body *Pliny* deſcribes under the Name of *Gagates*, *l*. 26. *c*. 19. and perhaps again *l*. 27. *c*. 10. under the Name of *Gemma Samothracia*. "*Samothracia inſula ejuſdem nominis gemmam dat nigram, ac ſine*

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† *Sulphur is very frequent in Coal, that Foſſil ever containing Bitumen, which is an Ingredient of Sulphur.*

‖ *Upon the outſides of ſome Pieces I have obſerved Impreſſions of ſmall Bivalves.*

" *pondere, ligno ſimilem.*" The Jet about *Whitby* lies in the Strata of Alum-Stone. They ſearch for it chiefly in the Fronts of the Cliffs, as they are bared and beaten to pieces by the Sea. The Perſon that gave me this Account had been very inquiſitive after it, and indeed has had the Monopoly of it for ſeveral Years. He had obſerved it from 1 to 10 Fathom in depth. As to the natural Form of it, 'tis generally flat; ſome of it round, leſſening towards the Edges, ſo as ſomewhat to reſemble a Millſtone: but 'tis moſt commonly oblong, and leſſening on each ſide towards the Edges, ſo as to carry ſome Reſemblance of a Rib ‡. This laſt ſplits lengthways, having Fibres directing their Courſe that way, in ſuch manner as to conſtitute a Grain not unlike that of ſome Wood. Tho Jet is found in the Alum-Mines; as alſo in the very ſame Cliffs that the Amber is. *Conf. g.* 47. *& ſeq.* 'Tis alſo, like that, found beat forth by the Sea, and lodg'd upon the Shores. The Jet lies in the Alum-Stone ſometimes flatways, ſometimes edgeways. I have ſeen of it that has had a very hard ſparry Matter in it.

I have by me a large Piece of Jet, from *Whitby*, 3 Inches and a half in thickneſs. Towards one ſide it becomes thinner, like *g.* 31. 'tis parted in two by a thin Vein or Plate of Vitriol, which liquated, being kept in a humid Place, ſo that the Maſs parted into two. In the Parts next the Vein the Jet ſplit eaſily into thin Plates, exactly reſembling thoſe of Wood, and being of a like Grain and Texture.

g. 31. Jet of the Rib-like kind, *Whitby*. I have obſerv'd of this kind in Breadth from 1 Inch to 7, in Thickneſs in the Middle from $\frac{1}{10}$ of an Inch to half a Foot. Nay I have ſeen four or five Pieces that were 8 or 9 Inches thick. I never ſaw any above two Foot in Length, but Mr. *Jackſon* aſſures me, he has traced it for 8 or 9 Foot. It is uſually ſtreight, but ſome I have ſeen inflected like a Rib. The two Edges are uſually parallel, and the Body of equal Breadth in all Parts. It is alſo equally thick in the Middle for the whole Length.

g. 32. A Piece of Jet gradually thinning towards one Edge, *Whitby* Cliffs.

CLASS VII. PART II.

SECT. 2. *Electrum, Succinum,* Amber.

EXTRACT.

Amber a Nodule, inveſted with a Coat, call'd *Rock-Amber*, *g.* 47. 48.

The Coat being worn off by the Agitation of the Sea, 'tis called *waſhed Amber*. *g.* 47.

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‡ *Pyritæ Coſtæformes. l.* 65.

Amber digg'd up at Land. *g.* 45.
——— found beaten by the Sea out of the Cliffs on the Shores. *g.* 40. *& ſeq.*

The Place where Amber *is found.*

Sheppey-Iſland, Kent. *g.* 40. 41.
Coaſt of *Norfolk.* *g.* 42.
From the Shores near *Plimouth.* *g.* 43.
On the Shores of - - - *Yorkſhire.* *g.* 44.
Clay-Pit, *Richmond, Surrey.* *g.* 45.
Shores of - - - *Norfolk.* *g.* 46.
Shores near *Whitby, Yorkſhire.* *g.* 47. 48. 49. 50.
Shores near *Yarmouth.* *g.* 51.

AMBER.

g. 40. 41. Two ſmall Pieces of clear Amber found on the Shores of the Iſle of *Sheppey, Kent.*

g. 42. Another, ſomewhat larger, found on the Coaſt of *Norfolk.*

g. 43. A ſmall Ball, above half an Inch in Diameter, cut out of a Piece of fat or white Amber, and poliſh'd. Found on the Shores near *Plimouth.* This is that ſort that is chiefly uſed in Medicine: and the Powers of *Succinum præp. Ol. Succini, & Sal ſuccini volat.* are ſufficiently repreſented by the common Pharmacologiſts.

g. 44. An oval Plate, cut out of a Piece of clear Amber, about an Inch long, poliſh'd. Found on the Shores of - - - - in *Yorkſhire.*

g. 45. Two Samples of Amber, brown and foul, found at leaſt 30 Foot deep in the Pit where they dig Clay to make Tiles at *Richmond* in *Surrey.* The Workmen call it *Roſin.* There is in ſome pieces of it a Salt, that I take to be Vitriol; which ſtarting and ſhooting, makes the Maſs very apt to diſſolve, and fall to Pieces, of which I have ſeen ſeveral Inſtances. *Conf. g.* 47. *infra.* One of theſe Samples being very little broken, and is cover'd with an exterior Cruſt, after the manner of all the true Nodules. Expoſed to Fire, this ſort burns, emits an Oil, and a Smell exactly like that of Amber, but exerts no electric attractive Power, when rubb'd and heated.

g. 46. A Piece of grey or fat Amber, from the Shores of - - - - *Norfolk.* Mr. *Merret.* I ſaw a Piece of fat Amber, found on the Shores near - - - - in *Kent,* that weighed 47 Ounces, and was the moſt firm and free from Flaws, as well as the moſt beautiful I ever ſaw. The fineſt from *Dantzick* was much inferior to it. Indeed I have ſeen ſeveral Pieces of Amber found in different Parts of *England* that much ſurpaſſed any I ever ſaw from Foreign Parts.

g. 47. Amber of a deep yellow, near brown; environ'd with a thick Cruſt of Amber, foul, brown, and very like that *g.* 45.* This Amber was found at the Foot of a Cliff on the Shores near *Whitby, Yorkſhire.* The Perſon who gave me this, had been long enquiring into the Nature of this Body; and he is very poſitive, not only that all Amber is originally lodg'd in the Cliffs and Strata, and beat thence by the Agitation of the Sea, but that it is all, when firſt beat out, covered with a Cruſt, after the manner of Flints, and ſome other Foſſils. And all that which is found naked, and uncovered, has had the Cruſt worn off by the ſucceſſive Agitation of it upon the Shores by the Sea. This laſt the People who gather it here, call *Waſh'd-Amber*; as they do the former, or cruſted, *Rock-Amber.* Which they find ever near the Cliffs, and but juſt freſh beat forth, as they do the Waſh'd-Amber more remote, and further out upon the Beaches and Shores, where it has been longer expoſed and toſs'd about. The ſame Perſon aſſured me he had ſeveral Times obſerved *young Flies* and *Gnats*, in Amber that he took up on theſe and the *Scarborough* Shores.‡

g. 48. White or fat Amber, covered with a coarſe brown Cruſt. Found in a Cliff on the ſame Shores.

g. 49. Fat Amber, naked, alſo from the Shores of *Whitby.*

g. 50. Amber, very fine and clear, of a reddiſh yellow or flame Colour. From *Whitby* Shores.

g. 51. Amber, of a very bright yellow, with a Caſt of red, having in the Body of it ſeveral Spangles, of a paler yellow, but wonderfully bright and ſhining. This was found on the Shores near *Yarmouth.* 'Tis turn'd and fitted up for the Head of a Cane, and is by much the moſt beautiful Piece of Amber I ever ſaw.

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* *Theſe Maſſes, compoſed entirely of the coarſe cruſty Amber, bear ſome Analogy with thoſe Nodules that are not uncommonly found in the Chalk-Pits of* Kent, *among the Flints; and are intirely compoſed of the ſame Matter of which the Cruſts of thoſe Flints are compoſed.*

‡ *The Amber is beat out of the ſame Cliffs that the Jet is. Conf. g.* 30.

CLASS VIII.

SALTS.

CLASS VIII. PART I.

The common Foſſil Salt, which is of the ſame Nature with the Marine Salt, and the Foſſils that contain it.

*g*x. 1. 2. Two Pieces of tranſparent Rock-Salt; one white, the other red. From - - - - - - in *Cheſhire.*

*g*x. 3. A pale brown Earth, with very ſmall Micæ in it. It has a ſaline Taſte; and doubtleſs contains in it a marine Salt. Pidgeons are continually picking at it. *Thenford, Northamptonſhire.*

*g*x. 4. A Piece of Stone of a brown Colour, with little Perforations in it. It taſtes manifeſtly Salt. *Oxendon* Gravel-pit, *Northamptonſhire.* Mr. *Morton.*

CLASS VIII. PART II.

The Foſſils that contain Alum.

Of the Methoa of extracting Alum. Vid. L. Erkern. l. 5. *c.* 10. Conf. Cl. 8. App. 1. Preface infra, *concerning the Nature of Alum. Of the Alum-Works of* Civita Vecchia, *and* Solfatura, M. Geoffroy Hiſt. de l'Acad. des Sciences, 1702. p. 20. 21.

ALUMINOUS FOSSILS.

g.x 10. 11. Two Pieces of the Clay taken from the Vents of the fired Coal-pits at *Fenham,* near *Newcaſtle.* They are burnt to a Brick-like Subſtance, and have an aluminous Salt, ſticking to them, that was ſublimed and brought from beneath, by the Fire that paſs'd forth at thoſe Vents.

g.x 12. An aluminous Salt collected from the ſame Vents.

g.x 13. The common Alum-Stone, or Mineral wrought for Alum. 'Tis of a dark grey Colour, having in it numerous ſmall ſhining Sparks. From the Duke of *Buckingham*'s Works, near *Whitby, Yorkſhire.*

g.x 14. Another, ſomewhat paler. *Ibid.*

g.x 15. Another, ſtill rather paler. *Ibid.*

CLASS VIII. PART III.

The Foſſils that contain Vitriol.

Of the Method of extracting Vitriol. Vid. L. Erkern, l. 5. c. 10. *Of the Vitriolic Pyritæ,* Conf. Claſs 9. infra. *Of the Nature and Conſtitution of Vitriol.* Vid. App. 1. ad Claſs 8. *Of the Medical*

Properties of Vitriol, adminiſtred either internally, or externally. See the Medical Writers.

VITRIOLIC FOSSILS.

g. x 20. Native capillary Vitriol, of a green Colour, amaſs'd into a Nodule about the bigneſs of a Nutmeg. From the Lead-Mine near *Mam-Tor*, in the *Peak*. Sir *George Wheeler* formerly ſhew'd me ſome of this ſort found, in conſiderable Quantity, in ſinking a Well, in a Common call'd the *Road*, near *Chareing*, betwixt *Maidſtone* and *Canterbury*, in *Kent*. There were found likewiſe ſmall *Cornua Ammonis* in a Stratum of Clay.

g. x 21. Native capillary Vitriol, of a pale brown Colour. From the Coal-pits at *North-Byerly*, *Yorkſhire*. Mr. *Fitz-Roberts*.

g. x 22. Native capillary Vitriol, part white, and part green; alſo from a Lead-Mine near *Mam-Tor*, in the *Peak*.

g. x 23. Native Vitriol, capillary, part of a green, part of a pale brown Colour. From the Canal Coal-pits near *Haigh*, *Lancaſhire*.

CLASS VIII. PART IV.

The Foſſils that contain Nitre.

Of the Method of boiling Earth for Saltpetre, and draining out the Salt. L. Erckern, l. 5. c. 1. & ſeq.

NITROUS FOSSILS.

g. x 30. A brown, light, porous, friable Stone yielding *Nitre*. Mr. *Jezreel Jones*.

g. x 31. Another like Body from - - - - - - - - in *Denbighſhire*. 'Tis found, in vaſt Quantities, from five to fifteen Yards deep, for a hundred Yards in length, and near twenty in breadth. It lies to the Day, rake and coarſe, *i. e.* in an Interval betwixt two Rocks; by which is, I ſuppoſe, meant a perpendicular Fiſſure.

CLASS VIII. APPENDIX I.

SULPHUR.

PREFACE.

There is in the Earth a Salt which may fitly be call'd Sal acidum Foſſile. *This is the Baſis of Sulphur, Alum, and Vitriol; the ſimple Salt, extracted out of any of theſe three indifferently, is the ſame: and is capable of conſtituting either of the other, with the Addition of a ſmall Proportion of a Bituminous, Cretaceous, or Metallic Matter.*

Sulphur is produced by only incorporating an oily or bituminous Matter with this Salt. Vid. *g.* 15. ſupra.

Alum is produced by joining a cretaceous, or other like earthy Matter with it.

Vitriol, by addition of a metallic Matter. If Iron be made uſe of, the Vitriol will be green; if Copper, blue.

APPENDIX II.

ARSENIC.

*g.** 20. A Mineral, white, part in form of Duſt, and part in ſmall Maſſes. It appears to be chiefly Arſenic. 'Twas taken forth of the grand Vein of the Copper-Marcaſit in *Goldſcalp, Cumberland:* There was not much of it. What I obſerved, was ſticking upon the Sides of the Vein, brought thither by the Water that drain'd in, and was perpetually dribbling, and dropping off from it.

CLASS IX.

METALLICO-SALSA.

PART I. PYRITÆ.

PREFACE.

The Pyrites *has its Name from* πῦρ; *which denotes Fire. For, theſe Bodies holding Sulphur, ſuch parts of this, as happen to be looſen'd upon ſtriking fire, are immediately kindled, burn, and make an addition to the Spark. Which is the reaſon that the* Pyritæ, *upon Eliſion, give fire much more plentifully than Flints, or other like Bodies, that have little or no Sulphur in them, ordinarily do. The* Arab *Naturaliſts expreſs this Body in their Language by the Word* Marcaſit. *For diſtinction ſake, I have taken the liberty to call thoſe that are independent, in form of Nodules, and lodg'd in Strata,* Pyritæ; *and thoſe that are found run in the Veins, or perpendicular Fiſſures,* Marcaſits.

Out of the Pyritæ *found plentifully on the Coaſts of* Eſſex, Kent, Suſſex, &c. *which are beat out of the Cliffs by the Agitation of the Sea, and are as well found in digging accidentally in many of the Inland Parts of thoſe Counties, is drawn that vaſt Quantity of Vitriol, made uſe of by Dyers in ſtriking their Colours, by Refiners for making their Menſtrua, and by Surgeons, Apothecaries, and other Artificers. In what Vitriol differs from Alum, I have ſhewn in its proper place.* App. 1. to Cl. 8.

The Pyritæ *of* Kent *and* Eſſex, &c. *yield, upon Tryal, a ſmall Quantity of Gold and Silver; and ſome of them a little Copper. As to Iron, I have found ſome few that have yielded one eighth of that Metal. I could never perceive any Arſenic in the* Pyritæ; *in which they differ from the Marcaſits, moſt of which contain more or leſs of that Mineral.*

EXTRACT.

Names vulgarly given to the Pyritæ. *Iron-Stones, h.* 33. *Fire-Stones, h.* 34. *Gold-Ore, h.* 39. *Horſe-Gold, h.*4.

A dusky grey Pyrites, cover'd with a Cruſt, after the manner of other Nodules, *h.* 36.

Sea-ſhells in the Pyritæ, *h.* 35.

Pyritæ moulded in Shells, both turbinated and Bivalves; ſee the 2d Part of this Catalogue, of the extraneous Foſſils.

Pyritæ, found in a Stratum of Chalk, *h.*6. 7. 11. 31.

——— in a Stratum of Earth.

——— in Shiver, *h.*43.

——— in the midſt of a Stratum of Stone, *h.* 16.

——— in Gravel, *h.* 17.

A Pyrites incorporated with a common black Flint, *h.*21.

——— having in its Centre a white ſemi-pellucid Spar, *h.* 1.

——— having its Surface ſhot into Angular Figures, tending towards Cubes; with ſome Grains of Lead concreted with it, *h.* 1. *vid. h.* 38. 41.

Pyritæ having their Surface ſhot into angular pointed Figures, *h.* 14. 19. 26. 30. 32. 45.

——— with Septa, in manner of the *Ludus Helmontij, h.* 28. 29.

——— form'd after the manner of the coralloid Aſtroites, *h.* 4.

——— form'd after the manner of the *Aſtroites coralloides undulatus, h.* 20. 41.

I found ſmall Pyritæ in form of the common *Fungi maritimi coralloides*, on the Coaſt of *Sheppey-Iſland, Kent, e.* 47. 48. *ſupra.* But they are ſince diſſolv'd and fallen to pieces.

——— of a teſſelated or cubical Figure, *h.*43. 44.

A Pyrites of a faint yellow, green, and blue, as holding ſome Admixture of Copper, *h.* 23.

——— holding Copper, *l.* 65.

——— of a yellow, ſhining, Braſs-like Complection, *h.* 1. 8.

——— of an Iron, or Ruſt-Colour, *h.* 3. *& ſeq.* 12. 23.

——— braſſy, with the Subſtance uniform, not ſtriated, *h.* 1.

——— braſſy, ſtriated from the Surface to the Axis, or Centre, *h.*8. 11. 21. 30. 31.

——— conſiſting of braſſy ſhining Plates that break in Rhombs, *h.* 45.

PYRITES.

h. 1. A large round Pyrites of a very bright braſs-like Appearance, beſet with ſeveral Tubercles, theſe and the whole Surface being ſhot into angular Figures tending towards Cubes. There are ſeveral Grains of Lead ſcatter'd through the Body of it. Within 'tis of a ſhining greeniſh Yellow. The Subſtance uniform, not ſtriated. In the very Centre of the Ball is a Lump of white ſemi-pellucid Spar of the bigneſs of a Nutmeg. Mr. *Flamſtead.* From - - - - - - *Derbyſhire.* ['Tis periſh'd, and fallen to pieces; the Salt ſtarting, and getting looſe.]

h. 2. Another leſs, of a Figure near oval, the Colour not ſo bright. Found on the *Iſle of Greans,* in the Mouth of the River *Thames.*

h. 2 *. Another, globular, the Tubera more depreſs'd, about an Inch in Diameter. 'Tis of a ſhining Copper-like Complection. Found on the Shores of *Thanet-Iſland.*

h. 3. Another, the Surface of a Ruſt-colour, riſing into ſeveral groſs Tubercles. 'Tis of an oblong Figure, and, both in that, and the Bigneſs, it nearly reſembles the Kidney of a grown Calf. Being a little broken in that part, which anſwers to the Pelvis, it appears within of a ſhining Braſs-like Conſtitution. Found about 40 foot deep in the great Chalk-pit at *Greenhythe, Kent.*

h. 4. Another, alſo of a Ruſt-colour outwardly. 'Tis about 4 Inches long: of a cylindric Figure; but a little crook'd, and ſomewhat ſwelling at each Extreme. At each end of it is a pretty large Cavity, in the middle, ſurrounded with ſeveral ſmaller, all ſtriated after the manner of the marine and foſſil *Aſtroitæ* and *Fungi Coralloidei,* from their Centre to their Circumference. Found in a Chalk-pit near *Cherry-Hinton*; where others of like Figure are frequently met with. The Workmen there call theſe Bodies *Horſe-Gold.*

h. 5. Another, of the ſame Colour, two Inches long, and of a cylindric Figure. In the middle 'tis ſomewhat rough, but ſmoother at each end. At one end, in the very middle, is a ſmall Apophyſis, or Stalk; on the other, likewiſe in the middle, a ſmall Cavity, as if ſuch a one had grown there too, tho' now broke off. From the ſame Chalk-pit.

h. 6. Another, of the ſame Complection and Figure, but a little thicker and ſhorter. At each end is a Stalk riſing out of a ſmall Cavity. Out of a Chalk-pit by *Graveſend, Kent.*

h. 7. Another Pyrites, of the ſame ſhape, only a little crook'd; of a dusky Ruſt-colour. Its Surface is thick ſet with ſmall angular pointed Shoots. There are Veſtigia of the Stalk at one end, tho it be now wanting. Being broke at the other end, the interior Conſtitution appears, partly of a ruſty, and partly of a braſſy Hue. 'Tis not ſtriated. From the before-mention'd Chalk-pit, near *Cherry-Hinton,* by *Cambridge.*

h. 8. Another Pyrites, little different in any reſpect from *h.* 5. and 6. Being broken, its interior Conſtitution appears. 'Tis ſtriated from the Surface towards the Axis of the Cylinder; and of a braſſy Colour, with a purple Caſt. I do not exactly remember where I found it; but 'twas in ſome of the Chalk-pits down the River, *Thames.*

h. 9. Another, thicker ſomewhat than *h.* 6. and little above an Inch long. In other reſpects, 'tis little different, except that there are no Veſtigia of Stalks at either end. From the Chalk-Pit near *Cherry-Hinton*.

h. 10. Another of a globoſe Shape, and bright ruſt Colour. 'Tis near two Inches in Diameter. The Surface riſes into ſeveral round Tubercles pretty large, ſome of which are ſtriated from the bottoms upwards. Out of a Chalk-Pit beyond *Deptford*, on the Entry of *Black-Heath*.

h. 11. Part of another of the ſameShape and Bigneſs. Within 'tis of a braſſy Hue, and ſtriated from its Center to the Circumference. From a Chalk-pit, near *Croydon*, in *Surry*.

h. 12. Another of an oval Figure, about an Inch in length. The Surface tuberous, and of a dusky ruſt Colour. From - - - - in *Norfolk*.

h. 13. Another Pyrites of the ſame Colour, and tuberous in like manner. 'Tis globular, and near an Inch in Diameter. Found in *Oxendon* Fields, *Northamptonſhire*. Mr. *Morton*.

h. 14. Another of near the ſame Shape and Complexion. The Surface of this is ſmoother, and finely ſhot into ſmall angular Figures. *Black-Heath*, near *Woolwich*.

h. 15. Another alſo globular, its Surface very ſmooth and polite, of a dusky brown Colour near black. Found upon the plough'd Lands in *Weekly* Fields, *Northamptonſhire*. Mr. *Morton*.

h. 16. Another of a roundiſh Form, a little broken. 'Tis throughout of a ſhining braſſy Complexion. 'Twas found in the middle of a Stratum of Stone at *Amble-ſide*, *Weſtmorland*.

h. 17. Another of the ſame Conſtitution and Colour, only not ſo bright. *Weſton ſupra Welland*, *Northamptonſhire*. This was found in digging in Gravel.

h. 18. Another of a compreſs'd Figure, round: its Conſtitution and Colour like that of the immediately preceding Pyrites.

h. 19. Two ſmall Pyritæ, of irregular Figure, and an extreme bright Braſs-like Complexion. The Surface ſhot into angular Figures. *Sheppey-Iſland*, *Kent*.

h. 20. A very curious Pyrites, of a brown Colour, with a ſlight ſhining braſſy Gloſs. 'Tis near globular, and about an Inch in Diameter. Its Surface riſing in an elegant manner into Ridges, undulated, and ſtriated from their bottom to their top, very much like ſome ſorts of the undulated coralline Aſtroitæ. From the Shores of the Iſland of *Sheppey*, near *Minſter*.

h. 21. Part of a Pyrites, ſtriated from the Center to the Circumference, of a greeniſh braſs-like Complexion, adhering to the common black Flint. *Sheppey-Iſland*, *Kent*.

h. 23. Another likewiſe flat, but larger. Externally 'tis of an Iron-Colour: within a faint green, blue, and yellow, with ſmall braſſy Sparks. Found near *Weymouth*.

h. 24. A Pyrites of a round; compreſs'd or lentincular Figure, and a dark brown Colour. 'Tis about an Inch in Diameter from Edge to Edge. 'Twas found on the Shores of the Iſland of *Sheppey*:

pey: where I have ſeen ſeveral others of like Figure, but generally leſs.

h. 25. A Pyrites of the ſame Colour and Shape, placed in the Cavity of another of an hemiſpheric Figure, in much the ſame manner as an Acorn in its Cup. From the ſame Shores.

h. 26. Another of an oblong Shape, about three Inches in Length, and one in Diameter. 'Tis of a ferruginous Colour, with ſome intermixture of a light brown. Its Surface riſes into large Tubercles; and the whole is thick ſet with ſmall pointed Studs. From the ſame Shores.

h. 27. A Pyrites of a ruſt Colour, compoſed of ſeveral Tubera cluſtered together in an irregular manner. This is leſs ponderous than theſe Bodies uſually are. From the plough'd Fields of *Thorpe-Malſor, Northamptonſhire.* Mr. *Morton.*

h. 28. A light brown ſtoney Body, with Veins of a dusky Pyrites running on the Surface and pervading the whole Subſtance of it, much after the manner of the Septa of the *Ludus Helmontij.* From the Shores of the Iſland of *Sheppey, Kent.*

h. 29. Another like Body, the Veins diſpoſed in a very beautiful and elegant Manner. From the ſame Shores.

APPENDIX.

h. 30. A Piece of a Pyrites of a pale ruſt Colour, ſtriated, or rather conſiſting of Fibres, tending from the Center to the Surface, and being of different Lengths, they render the Surface unequal; the longeſt joining, form pointed angular Bodies, with which 'tis ſtudded in an elegant manner. Out of a Chalk-pit beyond *Greenwich, Kent.*

h. 31. A Pyrites of a deeper or redder Ruſt-colour. This is ſomewhat bigger than a large Wallnut, in Figure near globular, only that its Surface is tuberous and unequal. Part of it being ſtruck off, it appears to be ſtriated within, its Striæ tending from the Surface to the Center. Found in a Stratum of Chalk near 100 Foot deep, in the great Chalk-pit at *Northfleet, Kent.*

h. 32. Another, from the ſame Pit, leſs, otherwiſe not different, except that the Tubera on the Surface are generally angular, terminating in ſo many Points, and therein much reſembling cryſtalliz'd Bodies. Chalk-pit by *Charlton, Kent.*

h. 33. Another ſmall one, oblong, and flat. 'Tis of a grey Colour, with a Caſt of Green: and thick ſet with ſmall ſhining braſſy Sparks. Found looſe on the Shore near *Scarborough Spaw.* The Inhabitants call theſe *Iron-ſtones.*

h. 34. Another about two Inches long, and 1 ½ over. The Surface not ſo ſcabrous as *h.* 31. & 32. but pretty ſmooth, though riſing in large Knobs. 'Tis of a brown Colour, but darker where 'tis worn: and has in ſome places Spots of white. Found ¼ of a Mile South of *Outhorn* in *Yorkſhire,* where theſe are call'd *Fire-Stones.*

h. 35. Another of a dusky grey Colour, but in ſome Places ſhining and braſſy. On the Surface of it is the Impreſſion of a ſmall Tellina: Theſe and other Shells being here commonly found in theſe Bodies. It lay 40 Fathom deep, in *Benwell-Coalery*, about 2 Miles from *Newcaſtle*.

h. 36. A Piece of a round Body. The whole was about three Inches in Diameter. 'Tis of a dark grey Colour, near black, and cover'd all over with a Cruſt $\frac{1}{4}$ of an Inch thick of a lighter Colour. This Cruſt is in ſome Parts, both of its Surface and Maſs, thick ſet with ſmall Parts of a ſhining braſſy Appearance. Found by *Hackneſs*, not far from *Scarborough*.

h. 37. A Pyrites, flat, having its Surface ſtudded over with ſmall Tubercles. 'Tis of a greeniſh Colour with a ſlight braſſy Caſt. From the Brook at the North End of *Welford, Northamptonſhire*. Mr. *Morton*.

h. 38. Another of the ſame Colour, but ſomewhat more braſſy and ſhining. The Surface riſes in almoſt all parts into ſmall angular Bodies, tending towards a cubical Figure. From *Outhorn, Yorkſhire*.

h. 39. Another, very ſmall, of a grey Colour, with many Parts of a ſhining braſſy Hue. From *Spitton-Cliff, Yorkſhire*. The Inhabitants call this ſort *Gold-Ore*.

h. 40. A large Pyrites, very uncommon, and extraordinary. 'Tis covered with a Cruſt of a reddiſh Colour, and about $\frac{1}{8}$ of an Inch thick. 'Tis broken, and its interior Subſtance appears elegantly variegated with a dark grey and a light brown, of which the former is the Ground, the other appearing partly in Spots and partly in irregular Veins. Each Colour is very diſtinct. There ſeems to be ſomething of a reſemblance between the Conſtitution of this Body and ‡ *d*. 10, & 14. In the reddiſh Cruſt, and the neighbouring Parts, are ſeveral ſhining braſſy Spangles. Found on the Shore near *North-Shields, Northumberland*.

h. 41. A Pyrites, of a ruſt Colour, about the bigneſs of a common *Sevil-Orange*. Its Surface is very unequal, tuberous, and undulated not unlike the Brainſtone, or the *Aſtroites maritimus Coralloides undulatus* of *Boccone, Obſ. Nat*. p. 142. The Undulations are compoſed of thin Plates ſet by one another in much the ſame manner as in thoſe Bodies. Some Part of its Surface is ſet with ſmall Cubes. Where broken, it appears of a yellow ſhining Braſs-like hue. From *Beacon-Hill*, in *Wiltſhire*.

h. 42. Another of a darker Colour, near round: and of the bigneſs of the largeſt Wall-nuts. Being broken, it appears to be ſtriated within from the Surface towards the Center: with a white ſhining Metallick Appearance. This was found, at *South-ſloke*, near the River *Thames*; where they are common, and yield *Vitriol*.

h. 43. A Pyrites of a ruſt Colour, cubic, and $\frac{2}{10}$ of an Inch in Diameter. Theſe are found commonly lodg'd in the Beds of Shiver, in *Yorkſhire*, and *Cumberland*. This was found near *Carliſle*.

h. 44. Another cubic Pyrites; larger than the former, and of an Iron-Colour. Found near *Carliſle, Cumberland.*

h. 45. Part of a Pyrites, large, braſſy, and ſhining; conſiſting of Plates that break into Rhomboid Figures. 'Tis covered over with a Cruſt, black within, without yellow, with a Caſt of Red. Found near the Tin-Mine of *Wheal-and-Coats-Luggon, Cornwall.*

CLASS IX. PART II.

Marcaſites.

PREFACE.

Of the Marcaſite, *ſee the Preface to Claſs* IX. *Part* I. *and to Claſs* XI. *Part* I.

The Sulphurous Marcaſites, *and, in particular thoſe call'd in* Cornwall, Mundick, *all hold Copper, more, or leſs. When that Metal is in ſuch Quantity as to compenſate the Pains and Charge of Working, the Mineraliſts call it not a* Marcaſite, *but a Copper-Ore; of which there are ſome Inſtances in the following Claſs.*

EXTRACT.

1. *Of the Colour, and external Appearance of the* Marcaſites.

A *Marcaſite*, cubic, yellow, ſhining, call'd by the *Corniſh* Miners *Copper-Grains. i.* 42.
——Yellow, braſſy, call'd in the Peak *Braſil-Ore. i.* 48.
——Yellow, braſſy, call'd by the Tinners of *Cornwall, Mundick,* and yellow *Mundick, i.* 15. 46.
——of a whitiſh or pale yellow, call'd by the *Corniſh* Tinners, *white Mundick. i.* 22 *.
——call'd in *Cumberland, Grey-Ore. i.* 24.
——of a yellow, gloſſy, braſs-like Hue. *i.* 1, 9, 31, 36, 48, 52.
——changeable, purple, blue and green. *i.* 10, 11, 17, 31, 38, 50, 51.
——of a blueiſh Colour. *i.* 27, 37.
——of a grey Colour, *i.* 22 *, 23, 24, 25.

2. *Of the external Figures of the* Marcaſite.

A *Marcaſite* ſhot into a cubic Figure. *i.* 1, 42.
——ſhot into Grains. *i.* 4.
Small Grains of *Marcaſite*, in an hard earthy Matter, grey with a Caſt of Green. *i.* 14, 35, 45.
A *Marcaſite* of a ſtrigated or ridg'd Form. *i.* 41.
—— with botryoid Efflorefcencies. *i.* 38.

3. *Of the internal Texture of the* Marcaſite.

Marcaſites, made up of thin Plates, laid one on another. *i.* 36, 38, 44.
——Fibrous, with a Grain like that of Wood. *i.* 26.
——of a plumoſe Texture. *i.* 57.

4. *Of the Origin and Place of the Formation of* Marcaſites.

Marcaſites, are all form'd in perpendicular Fiſſures. *i.* 38.
——in Veins in Canel-Coal. *i.* 12. 29.

5. *Of the other Foſſils incorporated with* Marcaſites.

Marcaſite with black Talc, Mock-Lead, *Blende*, *Galæna inanis*, or as the *Corniſh* Tinners call it, *Tin-Glaſs*, *i.* 37, 48, 53, 54, 55, 56. *Blende*, will neither calcine nor melt; but abides the Fire, and all the Alkaline Fluxes. *i.* 56.
Marcaſites, having Spar incorporated with them. *i.* 19, 20, 21, 22, 22*, 29, 31, 35, 37, 38, 45, 48, 50, 53, 56.
——having with them Spar cryſtalliz'd. *i.* 35, 57.
A *Marcaſite* with red Cryſtals. *i.* 47.
Marcaſites, all of them hold more or leſs of Sulphur. *i.* 23, 24.
——holding Arſenic. *i.* 23, 24.
——probably yielding Biſmuth. *i.* 15, 22*, 25.
——with a greeniſh Æruginous Matter. *i.* 34. 53.
Mundick yields ſome Copper. *i.* 15, 22, 22*. 53.
A Tin *Marcaſite*. *i.* 49.
Marcaſites holding Tin. *i.* 51, 52.
——holding a little Lead. *i.* 53.
——with Lead-Ore. *i.* 47.
——with Iron-Ore. *o.* 99.
——with Biſmuth. *i.* 15, 16, 17, 23, 24, 25. *Conf.* *i.* 54, 55.
——with Selenites. *d.* 46.
——with Flints.
——with Asbeſtos † *d.* 9.
——with Coal, *g.* 15.

MARCASITÆ.

i. 1. A cubical *Marcaſite*, the Cube about $\frac{2}{3}$ of an Inch in Diameter, and of a pale yellow Colour, with a metallick Gloſs, and appearing like Braſs. 'Twas found amongſt others of like Figure, adhering to Slate-Stone in its Fiſſures at *Kentmire*, near *Kendal*. This has the Root or Mark of adheſion to the ſide of the Fiſſure, off which 'twas broke. The cubic Pyritæ, being found looſe and independent, have not that Mark. Therein conſiſts the difference. "*Pyrites Coloris Aurichalci, Figura quadrata, ſeu ſimilis Teſſeræ.*" Aldrov. Muſ. l. 4. p. 574.

i. 3. A *Marcaſite*, of a bright Braſs-like Hue, cryſtallized in an obſervable manner, the Angles and Sides irregular. From - - - - in *Cumberland*.

i. 4. A *Marcaſite* of a deep yellow Colour, ſhot in ſome Parts, into Grains which are confuſed, and their Figure irregular. *Minehead*, *Somerſetſhire*.

i. 5. Another, much like the former. *Minehead, Somerſetſhire*.

i. 6. Another alſo of like ſort, ſhot upon a ſoft dusky grey Slate much ſaturated with Sulphur. From *Haigh* in *Lancaſhire*.

i. 8. Another of like ſort from another Pit near *Haigh*. The Texture of the Grains, and Application of the Plates to one another, very obſervable.

i. 9. Another, the Shoots of a ſhining braſſy yellow, confuſed, but very fine, and tending towards a cubic Figure. *Blogſaſon-Work, Cornwall*.

i. 10. Another of like kind, but the Shoots of a changeable Colour, betwixt a purple, blueiſh and green. *Blogſaſon-Work, Cornwall*.

i. 11. Another, from the ſame Mine, and of the ſame ſort, only the Colours in this are more vivid.

i. 12. Veins, of *Marcaſite*, pretty thick, and numerous, in a Piece of Canel-Coal, from *Haigh, Lancaſhire*.

i. 13. A *Marcaſite*, the Shoots very pure and yellow. From a Coal-Pit near - - - - in *Somerſetſhire*.

i. 14. Another, the Grains lying in an hard Earthy Matter of a greyiſh Colour with a greeniſh Caſt. From - - - - *Cornwall*.

i. 15. A Marcaſite of a very pale yellow Caſt, pretty free from terreſtrial Mixture, and by the manner of the Grain ſeems to hold ſome ſmall Proportion of Biſmuth. *Reedamore-Work, Cornwall*. This, and the following ſorts, are of the ſame Nature with thoſe now wrought at the Copper-Works, in vaſt Quantity, with Sea-Coal, at *Redbrook* in *Glouceſterſhire*. 'Tis found plentifully, in the perpendicular Fiſſures, all over *Cornwall*. It yields them from 1 in 14, to 1 in 24. To this, and moſt other Marcaſites, they there give the Name of *Mundick*.

i. 16. Another, equally fine, but of a much deeper yellow. *Cheſwater, Cornwall*.

i. 17. Another, of the ſame Colour, with an Intermixture of Purple. *Ibid*.

i. 18. Another, of an high yellow Colour. From a Copper-Mine at - - - - - - - in *Cumberland*.

i. 19. Another, yellow, with a Caſt of green, having intermix'd with it an equal Proportion of Spar. From - - - - - - near *Briſtol*. Mr. *Southwell*.

i. 20. Another, of like ſort, the Marcaſite and Spar in near an equal Proportion. Found in ſinking a Sough-Pit at *Haigh, Lancaſhire*.

i. 21. A Marcaſite, of a paler yellow Colour, with an Admixture of white Spar; and, as it ſeems, of Iron. From a Fiſſure, ſome of the Stone adhering on each ſide of the Maſs. Out of a Lead-Mine, at *Penroſe, Cornwall.*

i. 22. Another of a pretty deep yellow, with a ſmall Admixture of white Spar, and a hardiſh grey earthy Matter. From the Duke of *Somerſet*'s Works at *Goldſcalp, Cumberland.* This holds $\frac{1}{6}$ Copper: and was out of the ſame Vein with *l.* 62. *infra.*

i. 22 *. Another, grey, with an Appearance very like Biſmuth, and probably holding the Mineral. This is what they call *white Mundick,* in *Cornwall.* There is white Spar amongſt it. It holds ſome Copper: and lay in the ſame Vein with the foregoing. *Vide i.* 25. *infra.*

i. 23. A grey Marcaſite, it conſiſts chiefly of Sulphur, but holds a third Part of Arſenick, and perhaps a very little Copper and Biſmuth. From the Duke of *Somerſet*'s Works, call'd *St. Thomas's Works,* near *Goldſcalp, Cumberland.*

i. 24. Another, very like the foregoing. It conſiſts mainly of Sulphur and Arſenick, and ſeems to hold a little Biſmuth. The Miners call this *Grey-Ore.* From the Duke of *Somerſet*'s Works, at ------ *Cumberland.*

i. 25. Another grey Marcaſite, like the two foregoing, only part of it is ſhot into Grain. From *Killefrew-Wood,* in *Cornwall.* It ſeems alſo to hold Biſmuth. This ſort is called there *White Mundick.*

i. 26. A Marcaſite, in Texture reſembling the Grain of Wood, and ſo formed, as if two Pieces of Wood lay one a-croſs the other. The Marcaſite Grains are of a bright Yellow; but ſome of the Body is of a Black, the reſt of a Brick Colour. Found in ſinking a Well, near the Stables on *Gogmagog-Hills,* near *Cambridge.*

i. 27. A Marcaſite, pretty like that *i.* 22. *ſupra,* only it has a ſomewhat more blue Caſt. Found in ſinking a Well at *Great Bowden,* in *Leiceſterſhire*; where 'tis found pretty plentifully, in moſt of the Wells they dig thereabouts.

i. 28. A yellow Marcaſite, with a blackiſh Admixture. From the Copper-Mines of ------ *Cumberland.*

i. 29. A Piece of Coal, with fine white Spar, and a yellow ſhining Braſſy Marcaſite intermingled with it. Taken out of a Dyke in Sir *William Blacket*'s Coalery, *Newcaſtle.*

i. 30. A Marcaſite, flat, and equally thick in all parts, as if it had fill'd a Fiſſure. 'Tis about an Inch in thickneſs. The two oppoſite Surfaces are very black; within 'tis grey, with many Sparks of a yellow. From ------ on *Mendip,* in *Somerſetſhire.*

i. 32. A Piece of Marcaſite, of a deep yellow ſhining Gold Colour, except ſome ſmall Parts, which are of a ſhining Red or Purple, and a little Mixture of white Spar. It ſeems to hold a very ſmall Proportion of Copper. From Mr. *Courtney*'s new Copper-Mine, in the Pariſh of *Malland,* near *South Molton, Devonſhire.* This is one ſort of their *Mundick.*

i. 33. Another, little different, only not of a yellow quite ſo deep, with the Spar in greater Proportion, and part of it cryſtalliz'd. From *Nancy-keag Downs* in *Cornwall*. Mr. *Baſſet*.

i. 34. A Marcaſite of the ſame Colour with the precedent, but ſomewhat more bright and ſhining. On the Surface of it adheres a ſmall Quantity of a green æruginous Matter. From *Corbeck*, *Cumberland*.

i. 35. A large Marcaſite, conſiſting of Braſſy and Sparry Grains, near equally mix'd in all parts. Sent by the Name of *Treleath-Ore*. From *Cornwall*. Mr. *Baſſet*.

i. 36. A Marcaſite of a very fine Braſſy Hue. It appears to be made up of thin Plates laid one upon another. The Matter of it is very pure and free from any Mixture. The Surface is polite. 'Tis angular, as if cryſtalliz'd. From *Benwell-Coalery*, *Newcaſtle*.

i. 37. Another, with Spots very ſhining and bright, ſome blueiſh, others of a Copper Colour. Amongſt the reſt is a white Spar: and a black gloſſy Matter like Talc. This ſort of Matter is common in *Cornwall*: and call'd there *Mock-Lead*. 'Twill not run in the Fire with any Alkaline Flux: nor will it calcine. *Poldice-Work*, *Guinnop*, *Cornwall*.

i. 38. A Marcaſite, with white Spar on the Parts that grew to the Sides of the perpendicular Fiſſure from which 'twas ſeparated. The Outſide is thick ſet with botryoid Effloreſcencies, or ſmall Knobs, yellow, blueiſh, and purple; all of a ſhining metallic Hue: and compoſed of little Flakes or Plates; the whole being a very obſervable and beautiful Body. This was part of the *Deads*, as the Tinners call the Part of the Vein that they judge not worth working. From the Tin-Mine of *Wheal-and-Coats-Luggon*, *Cornwall*.

i. 39. Another, from a like Fiſſure: and of a Conſtitution little different. From *Poldice-Work*, in *Guinnop*, *Cornwall*. Dr. *Coamar*.

i. 40. A Vein-Stone, of a dark grey Colour; the Maſs thick ſet throughout with extremely ſmall cubic braſſy Marcaſites, out of a perpendicular Fiſſure of a Rock by *Buttermere*, a Lake where Charrs are taken plentifully, in *Cumberland*.

i. 41. A Mundick Grain, fine, ſhining like Braſs, half an Inch in Thickneſs, and terminating in an Edge like a Wedge; much like the Spar from the Lead-Mines of *Arkendale*. *f* 181. *&* *ſeq*. This was ſent by the Name of *Gold-Ore*, *from the Gold-Mine of Mr. Forteskue*, *at Copple-Tar*, *Devonſhire*.

i. 42. A large cubic Marcaſite, with a blueiſh Stoney Matter adhering to one Part of it. From *Vellan-Greas-Work*, *Cornwall*. The Miners call it *Copper-Grains*.

i. 43. Mundick Grains of ſeveral Sizes, and ſhot into ſeveral Figures; lodg'd part of them in a blueiſh grey, and part in a brown Stone. From the ſame Work.

i. 44. A Marcaſite, very fine, yellow and braſſy in one Part; compoſed of Plates, breaking with a Grain exactly like the Roch-

Alum from *Italy*, in the Catalogue of the *Exotic Foſſils*, p. . . . . From the Copper-Mine at *Hinxton, Cornwall.*

*i.*45. Small Mundick Grains, yellow; thick ſet in a grey Maſs, with a little white Spar. From *St. Columb, Cornwall.*

*i.*46. The common yellow *Mundick*. From the ſame Mine.

*i.*47. A Marcaſite, of a greeniſh yellow Caſt, with ſome Grains of a Matter very like Lead-Ore: and two ſmall hexagonal pointed Cryſtallizations, red, and much like Granats. From - - - - - - - in *Cornwall.*

*i.*48. A Marcaſite, of a fine Braſs-like ſhining Appearance, cryſtalliz'd; with an Admixture of white Spar, and Mock-Lead. This the Miners call *Braſile Ore*. From *Workſworth* in the *Peak*. Upon its lying by ſome time, a very yellow ſulphurous Duſt proceeds forth of it in ſeveral Parts.

*i.*49. A Tin-Marcaſite of a dusky Colour, near black, with a Caſt of green and yellow. *Carenbry, Cornwall.* Mr. *Baſſet.*

*i.*50. Another, Part of a braſſy ſhining yellow, Part blueiſh and purple; with white Spar. *Trevaſcas, Cornwall.* Mr. *Baſſet.*

*i.*51. Another, little different, only the blue and purple Colours are here more bright and fine. It holds a little Copper, and Tin. *Poldice, Cornwall.* Mr. *Baſſet.*

*i.*52. Another Tin-Marcaſite, with yellow Mundick, but the greater Part of it of a dusky blue Colour. *Reliſtian, Cornwall.* Mr. *Baſſet.*

*i.*53. A Lead-Marcaſite, being a mineral Maſs, flaky, gloſſy, and breaking in Angles; much like the Potters Lead-Ore, only 'tis of a Colour more dusky, and tending to black. The Miners call this *Mock-Ore, Mock-Lead, Wild-Lead,* and *Blinde:* Agricola, *Galæna inanis:* the *German* Mineraliſts, *Blende.* There are in it Veins of a yellow ſhining Marcaſite; with a little white Spar: and on one ſide a greeniſh Æruginous Matter. Upon tryal of a Piece of this Body in the Fire, it yielded a very little Copper, leſs Lead, and no Tin. The *Blende* is very obſtinate. Several Attempts have been made with the Alkaline Fluxes to run this, but in vain. *Godolphin-Ball, Cornwall.*

i. 54. Another like Maſs, ſent by the Name of *Tin-Glaſs.* Found in a Drift-Work 50 Foot deep, near *Caſtock, Cornwall.*

i. 55. Another, ſent alſo by the Name of *Tin-Glaſs*. Found about 20 Fathoms deep at *St. Stephen's*, in *Branwell, Cornwall.*

i. 56. Another Maſs of Mock-Lead, very ponderous, black, bright, and ſhining, with white Spar, but no yellow Marcaſite. From a Tin-Mine in *Wythyell, Cornwall.* There are vaſt Quantities of this Mineral in ſeveral Parts of that County. Many Tryals have been made of it; but it can neither be brought to calcine, nor run in the Fire.

i. 57. A Maſs compoſed alternately of Veins of white cryſtalliz'd Spar, and a black gloſſy ſhining Matter, ſeeming to be Mock-Lead. The Texture of the Veins of this laſt is very remarkable; it being compoſed of two Orders of Fibres, meeting in an acute Angle in the middle of the Vein, and compoſing a Body not unlike a Feather. Found in a perpendicular Fiſſure near *Caudbeck* in *Cumberland.* I have ſeen, in the *Mendip-Mines,* Manganeſe, nearly reſembling the black Part of this Maſs, incorporated with the ſparry Lead-Ore, as like the white Part of this Maſs.

CLASS X.

Metallic Minerals.

Mineral Bodies that approach ſomewhat the Nature of Metals; and, like them, run in the Fire to a Regulus; but not malleable: wherein it differs from the Regulus of Metals.

PART I. ANTIMONY.
II. CALAMIN.
III. BLACK-LEAD.

CLASS X. PART I. Antimony.

This is one of the moſt powerful Simples of our Diſpenſatories.

k. 1. Ore of Antimony, from ----- in *Flintſhire.* 'Tis found near the Day.

k. 2. Another Sample, from ----- in *Cornwall.* 'Tis not ſo rich as the former. Mr. *Kemp.*

k. 3. A pretty large Maſs of Antimony, cruſted over with a brown flakey ſulphurous Matter, with ſome Grains of Spar in it. *Barbary-Work, Cornwall.*

k. 4. Antimony, part of it in Striæ, and Part in Sparks, coated all over with a ſulphurous Cruſt of a pale brown Colour. Found plentifully 24 Foot deep in a Mine at *Howton,* in *St. Stephen's, Cornwall.*

k. 5. Part of another, finer, from the ſame Mine.

k. 6. Antimony-Ore. From *St. Auſtil's Mine, Cornwall.* Mr. *Scobell.*

CLASS X. PART II. Calamin.

This is in frequent uſe amongſt the Surgeons, in Plaiſters, Ointments, and Collyria.

k 11. *Lapis Calaminaris,* externally of a Ruſt Colour: within of a dusky green, got near *Blagen* upon *Mendip.* 'Tis found in the perpendicular Intervals. They meet with it at the Depth of about 3 Fathom. This was out of a perpendicular Interval. There is a little Spar in it: and ſome few ſmall Sparks of Lead-Ore.

k. 12. Another Sample, of a paler Colour. From the ſame Mine.

k. 13. Another Sample of *Lapis Calaminaris*, with ſome Spots of a deep red, and others of a Straw Colour. The latter only is Calamin. *Mendip, Somerſetſhire.*

k. 14. Another Sample, little different from that *k*. 12. Only on one Part are three Plates, each about $\frac{1}{10}$ of an Inch in Thickneſs, of a ſomewhat deeper and browner Colour, and of a harder and cloſer Conſiſtence. They are placed one over another; with a ſmall Interval, of about $\frac{1}{10}$ or $\frac{1}{12}$ of an Inch betwixt each, which conſiſts of a very pale yellow Matter, and is much more florid and porous than that of the Plates. This laſt is the Calamin. *Mendip.*

k. 15. A piece of *Lapis Calaminaris*, of a light brown Colour, friable, and thick ſet with ſmall Pores. There is in it a pretty large Vein of white Spar, having ſeveral Grains of Lead-Ore, of the Potters-kind, in it. *Mendip.* This holds a very ſmall Proportion of Calamin. What there is, of this Mineral, in the Maſs, is of a Straw-Colour, and porous.

k. 16. A Lump of Lead-Ore; coated over with a very thin Coat of Calamin, Part of it of a reddiſh, and Part of a dusky Green. From - - - - - - - - on *Mendip, Somerſetſhire.*

CLASS X. PART III.

Nigrica Fabrilis Merreti. Black-Lead, or Wadd.

See the Account of this Mineral, and the ſeveral Uſes of it, in the Obſervations relating to the *Nat. Hiſtory of Minerals*, p. 2.

This Mineral is ſometimes found in the Veins of Copper. *Vide l.* 59. *infra.*

⸸ *k*. 1. A Maſs of Black-Lead, of the very fineſt ſort; from the Mines in *Barrowdale*, 6 Miles from *Keſwick*, in *Cumberland.*

⸸ *k*. 2. Another Maſs, coarſer, run in ſome Parts of it into angular Figures. From the ſame Vein: as are likewiſe all that follow.

⸸ *k*. 3. Another, with Stoney Matter, Part of it grey, Part greeniſh, and Part of a Ruſt-Colour, incorporated with it. There are alſo in it two Lumps, or Knots, of Black-Lead, both very fine. *Ibid.*

⸸ *k*. 4. Another Maſs, very fine; with a reddiſh Stoney Matter adhering to it. *Ibid.*

⸸ *k*. 5. Another, with white Spar incorporated with it. *Ibid.*

⸸ *k*. 6. Another, with a Vein of Spar in it, Part of it white, and Part red. *Ibid.*

† *k.* 7. A Knot of Black-Lead, that, happening to be form'd within the Verge of another, has a Sinus; in which, Part of that exiſted, on one ſide. *Ibid.*

CLASS XI. METALS.

The Introduction to the following Claſſes.

Of Metals in general.

C. 1. The great Abundance of Metals, and of Minerals, in *England.*

Theſe one main Fund of our Trade, and Riches, our Strength and Power, by Sea and Land.

Late Diſcoveries of metallick and mineral Bodies.

And Improvements of the Art of ordering, ſeparating, and refining of them.

Conſiderable Defects yet remaining in the preſent Methods of ſmelting and managing of Ores.

As likewiſe in the Natural Hiſtory and Knowledge of them.

Foſſils, of little Value or Conſideration, work'd in ſeveral Parts of the Kingdom.

Whilſt others of great Importance are neglected: and their Worth not known.

Methods of remedying this.

The Deſign of the preſent Papers: and of the Diſcourſe concerning Mining, and that concerning Aſſaying.

The Uſe and Advantage of metallick and mineral Studies to the Publick.

C. 2. Of the Steadineſs and Conſtancy of Nature in all its Productions: and in the Formation of all Bodies.

This happens, 1°. from the Conſtancy of the Proceedure of the Agents that are inſtrumental to the Formation of thoſe Bodies: And, 2°. from the Unalterableneſs of the Corpuſcles, which ſerve for the conſtituting and compoſing of thoſe Bodies.

All Gold, when equally pure, and freed from extraneous Matter, is abſolutely alike in Colour, Conſiſtence, ſpecific Gravity, and all other reſpects; the Corpuſcles which conſtitute that Body being perfectly uniform and homogeneous.

The ſame holds in Silver, Iron, and all other Metals: as likewiſe in all the ſimple Minerals, particularly Talc, and Cryſtal; which are found incorporated with all the ſeveral kinds of Metals, much more frequently than any other Bodies beſides in all the whole mineral Kingdom.

Sect. 1. *Of the Fibrous Talc.* Claſs IV. Part III.

This Body generally holds to its fibrous Texture with what other Matter ſoever it happens to be incorporated, unleſs that Matter be ſuperior to it in Proportion very greatly indeed.

Of the *Hæmatites*, and *Schiſtos*. The Talc in theſe Bodies keeps to its fibrous Texture, tho' they hold 10 or 12 Parts in 20 of Iron. Compare the *Engliſh* fibrous Talc, † *d.* 1. with the *Hæmatites*, *o.* 74.

So alſo in the green, cruſty, fibrous, talky Copper-Ore. This yields 5 Parts in 8, of Copper. *l.* 45, 46.

Likewiſe the fibrous Talky Lead-Ores, *n.* 56. *&* *n.* 75. *&* *ſeq.* yield $\frac{2}{3}$ of Lead.

Metal diſcover'd in theſe Bodies by its Gravity.

The particular Species of Metal, by its Colour, Hue, and Complexion.

The fibrous talky Iron-Ores all red.

The fibrous talky Copper-Ores all green.

The fibrous talky Lead-Ore white, *n.* 75. or yellow, *n.* 54. 56, 57.

Of the fibrous Conſtitution of ſome of the Pyritæ and Marcaſites.

Of the fibrous Conſtitution of Antimony.

Of the fibrous Conſtitution of ſome Cinnabar.

Of the fibrous Conſtitution of the Asbeſtos.

Of the fibrous talky Spars.

Of the fibrous, talky, ſparry Plates of ſome of the corneous Flints, *c.* 263. *&* *ſeq.*

Of the fibrous, talky, ſparry Plates of the *Ludus Helmontij*.

Of the fibrous, talky, ſparry Pipes of the *Lapis Syringoides*.

Of the fibrous, talky, ſparry Cruſts of ſome of the *Stalactitæ*.

Of the fibrous, talky, ſparry Conſtitution of the *Stelechites*, and ſome others of the Foſſil Corals.

Of the fibrous, talky, ſparry Cones of the *Belemnites*.

Of the fibrous, talky, ſparry Plates form'd out of the Water of the Springs in and about *London*, upon the Evaporation of the Water: particularly in the common Tea-Boilers.

APPENDIX.

Of the fibrous, talky, ſparry Cruſts of ſeveral Concretions in animal Bodies: particularly of the *Bezoar*.

Of the fibrous, talky, ſparry Cruſts of the Stone of the *Veſica Fellea*.

As alſo of the Stone of the Kidneys.

And of the Stone in the *Veſica Urinaria*.

Of the fibrous Conſtitution of ſome of the factitious Vermillions.

Sect. 2. *Of Cinnabar of Antimony.* o. 42.

Of Cryſtals and Spars. Theſe are found incorporated with Metals of all ſorts, much the moſt commonly of any Foſſils whatever.

The four grand Teſts, or Criteria of Metals, incorporated with, or contained in Spar or Cryſtal: 1. The ſpecific Gravity of the Body. 2. Its Texture. 3. Its Figure. 4. Its Colour.

§. 1. The ſpecific Gravity of Spars of various ſorts.

The ſpecific Gravity of Cryſtal.

All Sparry and Cryſtalline Bodies, that ſurpaſs that Standard in ſpecific Gravity, hold Metal.

§. 2. As to the Texture or Grain, and interior Conſtitution of Cryſtal, 'tis irregular: and breaks uncertainly. But when incorporated with the fibrous Talcs, it ſhews, if broke, a ſtriated or fibrous Texture, like that of thoſe Talcs; of which, more above.

When it breaks into angulated Pieces or Figures, *e.gr.* Cubic, or rather inclining to Rhomboid; 'tis diſpos'd to that Texture by Lead that is incorporated with it. And ſuch Cryſtal, or Spar, is frequently found in the Veins along with the Lead-Ore: particularly in the Lead-Mines near *Workſworth.* Vide *f.* 25. This is in ſpecific Gravity to Water, as $2\frac{13}{20}$ to 1; whereas pure Cryſtal is but as $2\frac{1}{2}$ at the moſt. This ſhews that there is an Admixture of extraneous Matter in it: and ſeveral Experiments I have made upon it, prove that Matter to be Lead. *e.gr.* Diſſolv'd in Acids, it gives a Sweetneſs to the Menſtruum exactly like that imparted by *Saccharum Saturni,* diſſolv'd in like manner. And, by Tryals in the Fire, I have obtain'd ſome ſmall Quantity of Lead out of it.

A Spar very common in Lead-Mines, that is ſhattery, and breaks in Squares, exactly like the fineſt Pottern-Lead-Ore.

§. 3. As to the exterior Form of Cryſtal, when pure, 'tis found ſhot only into a pyramidal Figure: or into a Pyramid erected upon a Column; each with ſix Sides, and Angles.

Whenever it recedes from that Figure, the Variation is caus'd by the Admixture of ſome extraneous Matter, either mineral, or metallick.

Metallick Matter, when pure and ſimple, never ſhoots into an angulated Figure: nor is indeed capable of doing that.

The Bodies that, incorporated with Metals, diſpoſe them to ſhoot into angulated Figures, are either, 1. *Sulphur;* or, 2. *Cryſtal.* And all Foſſils that are angulated, or ſhot, have more or leſs of one or other of thoſe Minerals in them, *n.* 132.

1. There is ever Sulphur in the teſſellated Pyritæ, and the angulated Marcaſites; neither of which indeed ever hold any conſiderable Quantity of Metal.

2. But Spar and Cryſtal are infinitely more obvious and common: and found more or leſs incorporated with the Metals of moſt Mines in the World.

Where the Cryſtalline Matter prevails, and is ſuperior in Quantity to the Metallick, the Body is more or leſs pellucid; anſwerable to the greater or leſſer Proportion of the Cryſtal.

But, when the metallick Matter is ſuperior, the Body is in courſe opake. Inſtances, in the Tin Grains - - - - the teſſellated Lead - - - - and the Iron Rhombs.

Where there is metallick Matter, incorporated with the Cryſtalline, it frequently cauſes this to recede from its natural hexagonal Figure, and to aſſume one different, anſwerable to the Figure and Diſpoſition of the Parts of the particular Metal incorporating with the Cryſtal in its Concretion.

Iron, incorporated with Cryſtal, determines the Body to ſhoot into a Rhomboid Figure, *o.* 19.

Tin, incorporated with Cryſtal, diſpoſes it to ſhoot into a quadrilateral Pyramid, ſometimes placed on a quadrilateral Baſe, or Column, *m.* 1. *m.* 6.

Lead determines it to a Cubick or a Parallelipiped Figure.

The ſpecifick Gravity of the pure, pyramidal, or ſprig Cryſtal, $2\frac{4}{10}$. $2\frac{1}{2}$.

The ſpecifick Gravity of the Cubick Cryſtal, *f.* 88. is $3\frac{1}{10}$.

Tryals of the Cubick Cryſtals by acid Menſtrua: and by Fire, evincing that they hold Lead.

The diced Cryſtals, *f.* 87. *88. 89. & *141. have all a Caſt, more or leſs, of yellow, the Colour imparted to Cryſtal by Lead, when incorporated with it. *Confer.* §. 4. *infra.*

The Cubick Cryſtals are found in the Veins along with the Lead-Ore, in the Lead-Mines of *Weſtmorland*, *Arkendale* in *Yorkſhire*, &c.

Sometimes where the Lead is not ſufficient in Quantity to obſcure the Body, and render it opake, yet it is capable of determining it to a Cubick Figure.

The ſame Cryſtal, holding Metals of different kinds, may be diſpos'd by the one to a particular Figure, and by the other to a particular Colour. Inſtances of Lead and Iron, in the teſſellated purple Cryſtals, *f.* 91. & *ſeq.*

Different Metals, or Metals and Minerals, incorporated with Cryſtal in the ſame Body, give it a Figure ſomewhat compounded and irregular. Of this there is an Inſtance in *f.* 93 †. in which all the Cryſtals that hold Lead are yellowiſh, and of a cubic or parallelipiped Figure; whereas thoſe that are green, and hold Lead and Copper, recede from that, and are of an irregular Figure.

§. 4. *Of the various Colours obſervable in Cryſtals.*

Theſe ariſe from an Admixture of ſome extraneous Mineral, or metallick Matter, but much more commonly the latter, incorporating with the Body in its Formation.

All the Gems owe their Colours to an Admixture of ſuch extraneous Matter, chiefly metallick, with the cryſtalline.

They are found either in form of Nodules, repoſited in the Bodies of the Strata; or elſe cryſtallized in the Fiſſures or perpendicular Intervals of thoſe Strata.

The Nodules are either, 1. Solid, and of Figures wholly irregular and uncertain like Pebles. 2. Solid, and round, with their external Surfaces beſet all over with cryſtallized Gems. 3. Concave, having their inner Surfaces beſet with like cryſtallized Gems. 4. In Rhomboid Figures. 5. In form of Columns, with ſeveral Sides, generally ſix, terminating at each end in a Point.

The Gems in form of Nodules were form'd during the time of the Deluge, along with all other metallick, and mineral Nodules.

Thoſe in the perpendicular Fiſſures are form'd and grow there like the Cryſtals and Spars; and were form'd by the ſame means.

The Nodules were ſuſtain'd amidſt metallick and mineral Matter during their Formation; and the Gems in the Fiſſures have frequently Minerals and Ores of Metals accompanying them.

The black Stones and Gems owe their Colour to Tin, *m*. 1.

The red Stones and Gems owe their Colour to Iron; and are found chiefly in Iron Mines, or along with the Ores of that Metal.

Stalactitæ of a red Spar in the Veins of Iron-Ore, *f*. 66. 67.

Red Cryſtal and Spar in Iron-Ore, *o*. 28. 55. 59. 60. 61. 98.

The *Briſtol* Stones have frequently a Tincture of red.

I obſerv'd in *St. Vincent's-Rock*, by that City, ſome Stones that nearly approach'd the Granate Complexion; and ſeveral very nearly reſembling the Amethyſt. That, and indeed moſt of the Rocks thereabouts, are of a red Hue; and impregnated with Iron. And indeed moſt of the *Briſtol* Stones, particularly the red, I found actually growing along with Iron-Ore in the Veins and Fiſſures of thoſe Rocks.

Of the Granate, *i*. 47 †. *o*. 2.

Of the Ruby.

Of the Amethyſt, *f*. 80.

The green and blue Stones owe thoſe Colours to an Admixture of Copper. That Metal, diſſolv'd, and incorporated with an Acid, aſſumes a green Colour; with an Alcali, a blue, *l*. 53.

Spar, white, tinged with green, yielding $\frac{1}{16}$ Copper, *f*. 15.

Cryſtal, Part pellucid; and Part tinged throughout with green, along with Copper-Ore, *l*. 53.

Cryſtal and Spar of a green Colour from Veins of Copper-Ore, *f*. 15. 15*. 16. 93 †.

Of the Emerald, *l*. 53.

Copper-Ore, of a green Colour, very frequent.

Of Ærugo, or Verdigreaſe.

Of the green Ruſt of Braſs, and of Copper.

Copper-Ore of a blue Colour.

Of the Saphir, *l*. 53. 54.

Blue Spar, *f*. 16*. 16 †.

The yellow Gems owe that Colour to an Admixture of Lead.

Of Litharge.

Of *Saccharum Saturni*.

Of *Vitrum Saturni*, *p*. 503. *o*. 12.

A Calx of Lead, *Minium*, or Litharge, run down and flux'd with a triple proportion of cryſtalline Pebles, or Sand, conſtitutes a Glaſs tranſparent and yellow.

The Specific Gravity of *Vitrum Saturni*.

The Specific Gravity of the Topaz.

Of the Topaz, its Colour and Conſtitution, *f*. 128. 177. 177 *. *o*. 12.

A yellow cubic Cryſtal from a Vein of Lead-Ore, *f*. 141 *.

Of a ſort of Lead-Ore, of a greeniſh yellow Colour, from *Mendip* - - - - - -.

APPENDIX.

Of the different Hardneſs of the various kinds of Gems. This chiefly happens from the different Hardneſs of the cryſtalline Matter, which is the Baſis or main Ingredient of them.

That Matter ſeems to be of three ſorts. 1. The *Common Cryſtal*, which appears to be the Baſis of the Occidental Topaz, Amethyſt, and Saphir; of the Opal, the Chryſolite, the Aque Marine, the Chalcedony, the Jacinth, the Vermilion; of the Nephritic Stone, the Jaſper, and the Heliotropium; of the Cornelion, the Beryl, the Agat, the Cat's Eye, the Onyx, the Sardonyx, and the Moco Stone.

2. Another Species of Cryſtalline Matter, many degrees harder than the common Cryſtal, and uſually call'd the *White Saphir*. This is the Baſis of the Granate, the Oriental Topaz, the Amethyſt, the Ruby, and Saphir.

3. The *Adamantine Cryſtal*, or conſtituent Matter of the Diamond. Even this likewiſe admits of a metallic Admixture; and is ſometimes obſerv'd with a yellow Tincture, as alſo, tho' much more rarely, with a green, red, or blue.

The Hardneſs of ſeveral of the Bodies of the firſt Claſs is much augmented by the Incorporation of the additional Matter. Thus the Jaſper, Heliotropium, and Agat, are four times as hard as Cryſtal, which is the Baſis of thoſe Stones.

But the Hardneſs of ſome of the Bodies of the ſecond Claſs is diminiſh'd by the additional Matter; and the Oriental Granate, Topaz, and Amethyſt, are not ſo hard as the white Saphir.

Of the ſpecific Gravity of Cryſtal, the white Saphir, and Diamond; as alſo of the various kinds of colour'd Gems.

The Refraction of Cryſtal, the white Saphir, the Diamond; and the ſeveral kinds of tranſparent colour'd Stones.

Of the various ſorts of colour'd Glaſſes, Paſtes, Enamels, and factitious Gems.

A Recapitulation, with the ſeveral Canons or Rules of the Art of judging of the Conſtitution, and the mineral or metallick Contents, of any Body; founded upon the ſpecific Gravity, the Texture, Figure, and Colour of it.

Metal, of the ſame ſort, has ever the ſame Properties, and is alike in all reſpects, in what part of the World ſoever it is got, or in whatever Matter it is found, when it is diſengaged from that Matter, and brought to be equally pure, and free from extraneous Mixture.

CLASS XI. PART I.

The Ores of Copper.

PREFACE.

Copper is found incorporated with very various Matter; in particular with the Sand (l. 1. & ſeq.) *of the Stoney Strata; with the Matter of the Lapideous Nodules; with Sulphur, or other Minerals; with Spar; and with Earth. Where the Copper is predominant, and in ſuch Quantity as to be worth working, I have ranged the Body amongſt the Copper Ores; but, where the other Matter is ſuperior, I have ranged it under the proper Head of that Matter. Of this there are Inſtances in the Marcaſites and the Pyritæ;* (i. 15. 16. 17. 23. 32. 51. 53.) *in the Spars and Cryſtals that are tinged with blue and with green* (f. 16. 93.) *in the poorer* Lapis Armenus (a. 52.) *and* Terre Verte (a. 53.) *and finally, in the Tin and Lead Ores* (n. 104.)

The EXTRACT.

Steel-grain'd Copper-Ore. *l.* 42.
Copper-Ore of a dusky brown Colour, near black, *l.* 63.
——— gloſſy, purple, *l.* 64.
——— red, with a Caſt of Purple, *l.* 38.
——— friable, æruginous, green, *l.* 16 †.
——— friable, with a green villoſe Coat, *l.* 47.
——— with a hard, green, æruginous Cruſt, ſtriated a-croſs, or having tranſverſe Fibres, in manner of the *Lapis Hæmatites*, *l.* 45.
——— with fibrous talky Concretions, green, *l.* 19. 38.
——— vein'd with blue and green, *l.* 55. 59.
——— green, blue, and black, *l.* 16*. 18. 22. 37.
——— blue, or *Lapis Armenus*, *l.* 26. 27. 28. 29.
——— with Spar, white, green, and blue, *l.* 9. 10. 11. 12. 13*. 14. 17. 24. 35.
——— green, with green Cryſtals, *l.* 16. 53.
——— blue, with blue Cryſtals, *l.* 25. 54.
Copper diſſolv'd with a volatile Alkali, takes a blue; with an Acid, a green, *l.* 53.
——— blue, with white fibroſe Lead-Ore, *l.* 28.
Copper-Ore with Potters Lead-Ore, *l.* 5. 8. 35.
——— with Tin-Ore, *l.* 22.
——— with Iron-Ore, *l.* 18. 19. 38.
——— with Marcaſite, *l.* 16*. 18. 22. 37.
Mundick, holding Copper, with white Spar, *l.* 61.

Copper-Ore, with Wadd or black Lead, *l.* 59.
——— in the Maſs of Sand-Stone, *l.* 1. 2. 3. 4.
——— Virgin or Native Copper, *l.* 30. 31. 32. 33. 48. 50. 51.
——— with Bits of white Spar in it, *l.* 49.
Green Ore yielding $\frac{1}{2}$ Copper, *l.* 25.
——— yielding $\frac{2}{3}$ Copper, *l.* 46.
——— blue, yielding $\frac{1}{2}$ Copper, *l.* 26. to 29.
Æruginous, friable, green Ore, $\frac{1}{2}$ Copper, *l.* 16 †.

Copper-Ores.

l. 1. A gritty Sand-Stone with a white Peble in it, 'tis tinged with a green Colour. White Pebles are frequently found in it, and ſome near pellucid. There is a little Vitriol in it: and 'tis ſuppoſed, ſome Copper, but ſo little I could never extract any. From Mr. *Boothe's* Works at - - - - - - in *Cheſhire.*

l. 2. Another Sample, with Spots of a fine blue; from the ſame Mines.

l. 3. Another, from the ſame Mines. It has an admixture of a braſs-like Marcaſite, and white Spar, with ſome ſmall Quantity of Copper.

l. 4. Another, without Spar or Marcaſite, holding ſomewhat more Copper, with a little Lead or Antimony, as I judge by View. From the ſame Mines.

l. 5. A gritty Copper-Ore, with Spots of brown and green. It has a few Grains of Lead-Ore in it. From *Cumberland.* Mr. *Nicolſon.*

l. 6. A yellowiſh brown Spar. By its weight I conjecture 'tis impregnated with ſome Metal, probably Copper. From the Copper Mines of - - - - - in *Cumberland.* Mr. *Nicolſon.*

l. 7. A Spar of a brick Colour, from the ſame Mines; perhaps it holds a little Copper. Mr. *Nicolſon.*

l. 8. Spar, white and green: it contains Copper. And there are ſeveral Grains of ſomething which appears like Lead. From a Lead-Mine at *Nenthead* in *Cumberland.* Mr. *Nicolſon.* vid. *l.* 35. *infra.*

l. 9. Spar, white and green, with a very bright blue. It holds a little Copper. From the ſame Mine. Vid. *l.* 36. *infra.*

l. 10. A brown Spar, with Spots of blue and green. It holds a little Copper. From the Mines of - - - - - - - in *Cumberland.* Mr. *Nicolſon.*

l. 11. Spar, pellucid and green, cryſtallized: with an admixture of a little Marcaſite, and a little Copper. From *Caldbeck* Copper-Mines, *Cumberland.* Mr. *Nicolſon.*

l. 12. Spar, white, pellucid, and green, with an admixture of Marcaſite, Lead and Copper. From - - - - *Cumberland.* Mr. *Nicolſon.*

l. 13. Spar, brown, with a little green: and a great Proportion of a Braſs-like ſhining Marcaſite, alſo a little Copper. From the Mines of - - - - in *Cumberland.* Mr. *Nicolſon.*

l. 13*. Another Sample, one half conſiſting of Spar, white, with a Caſt of brown: the other of a yellow ſhining Marcaſite. In this latter appear ſeveral Spots of a green Colour: and ſome few of a fine bright blue. In one Part of the Spar, is a ſmall Cavity ſet round with Shoots of a diaphanous cryſtalline Spar: and ſome of the Cryſtals have a fine ſoft glance of yellow with an Eye of red. From the ſame Mine.

l. 14. Spar pellucid, white, and green, with a little Marcaſite and Copper, and a very ſmall ſhare of Lead. From - - - - - in *Cardiganſhire.* It lay within a Fathom of the Graſs.

l. 14*. A Maſs conſiſting chiefly of white Spar a little pellucid, with Veins of Antimony, and ſeveral green Copper Spots. 'Tis ſaid to yield a little Lead. There is a Vein of Marcaſite in it, but ſo fine 'tis ſcarcely diſcernible. Found with the foregoing. The five firſt of theſe Bodies are Stoney, and not worth working. The following are Sparry, hold little Copper, and ought rather to have been rank'd amongſt the Vein-ſtones.

l. 15. White Spar, with a Braſs-like Marcaſite, and a ſmall admixture, as it ſeems, of pure Virgin-Copper. Mr. *Southwell.*

l. 16. A blackiſh Copper-Ore, very poor, with Spots of green. On one ſide of it is a cryſtalliz'd Spar, pellucid, and green. Mr. *Kingſton*'s Mines in *Northumberland.*

l. 16*. A Copper-Ore, with Spots of green, blue, and blackiſh: alſo an admixture of Marcaſite. It holds about $\frac{1}{4}$ of Copper. From the ſame Mines.

l. 16†. A green æruginous Ore, from the perpendicular Fiſſures of the ſame Mines. It holds about $\frac{1}{2}$ Copper.

l. 17. Spar, white and green, with an admixture of Marcaſite, and ſome little Copper. *Cumberland.* Mr. *Nicolſon.*

l. 18. Copper-Ore, of a dusky brown Colour, with Spots of green and blue. There is Marcaſite amongſt it, and a very little Iron. *Cumberland.* Mr. *Nicolſon.* Vid. *l.* 37. *infra.*

l. 19. Copper-Ore of much the ſame Colour with the former. It contains a very little Copper, with Marcaſite, and a ſmall admixture of Iron. There are in ſome Parts of it capillary or fibrous ſhootings of the Copper, of a green Colour, very pretty. Near *Aſhburn* in the *Peak.*

l. 20. Another Sample, not much different from the former, it probably may hold about $\frac{1}{16}$ of Copper. From - - - - - - in *Cumberland.*

l. 21. Another, with Veins of green, a ruddy black, and yellow ſulphurous Marcaſite. It ſeems to hold about $\frac{1}{16}$ of Copper. From - - - - - in the *Peak.*

l. 22. A Marcaſite of a ſhining, braſſy Complexion, with Spots of purple and blue. It ſeems to hold about $\frac{1}{16}$ Copper: and, as 'tis ſaid, a little Tin. From - - - - - - in *Cornwall.*

l. 23. Copper-Ore, of a fine purple Colour, with an admixture of a ſhining braſſy Marcaſite, and white Spar. It is ſaid to hold $\frac{3}{4}$ of Copper, but this Sample does not ſeem really to hold above $\frac{1}{8}$. 'Tis found in great Quantity. From the New Mines of *Comarten,* in *Devonſhire.*

l. 24. Copper-Ore of a dusky Colour, with green and blue. There is with it a ſmall admixture of Spar. This holds $\frac{1}{3}$ of Copper. From Sir *Thomas Stanley's* Mines at *Alderly-Edge*, in *Cheſhire.*

l. 25. A green porous Ore, conſiſting of Laminæ, with ſome tuberous Efflorefcencies. From the perpendicular Fiſſures of - - - - Mine in the *Peak.* It holds $\frac{1}{2}$ Copper.

l. 26. Copper-Ore of a sky, or pale blue Colour; found in ſmall round Lumps, ſome a little larger, others leſs than Peaſe. They yield near $\frac{1}{2}$ Copper. *Cheſhire.* Mr. *Upton.*

This is the *Lapis Armenus Officinarum*; uſed by the antient Phyſicians in their Purges, in Caſes of Melancholy and Phrenſy.

l. 27. A blue porous Ore, with brown Spar adhering to it. The blue Part will probably yield $\frac{1}{2}$ Copper. From Mines formerly wrought by ſome *German* Undertakers at *Workſworth*, in the *Peak.*

l. 28. Copper-Ore of a fine Azure Colour, that yields about $\frac{1}{3}$ Copper. From *Malham* in *Yorkſhire.* It lies in a looſe Soil, amongſt white fibroſe Lead-Ore, like that *n.* 56. There is ten times as much of this latter Ore as of the Copper. It lies 8 Fathom deep.

l. 29. Two Samples of Copper Ore of a ſomewhat deeper blue Colour. From *Malham* in *Yorkſhire.* Mr. *Lydall* aſſures me that he has melted many Tuns of it, and it yields full $\frac{2}{3}$ Copper run with Sea-Coal. It makes a good Colour; for which uſe he ſold one Tun for 100*l.* and 'twas carry'd to *Rotterdam.* Theſe Mines are not now work'd.

l. 30. Copper-Ore, of an Iron-Colour, with a Lamina of green adhering to it, and virgin or native Copper ſhooting out of it. From Mr. *Truebody*'s Mines in *Cornwall.* "*Purum autem ſæpe invenitur Aurum, Argentum, Æs, Argentum vivum: minus ſæpe Ferrum, & Plumbum cinereum: vix unquam Plumbum candidum & nigrum.*" Agricola de re Metal. L. 5. p. 76.

l. 31. Two Flakes of pure fine native Virgin-Copper. 'Tis in Plates, and malleable. From - - - - - in *Cornwall.*

l. 32. A piece of the Stone to which the aforeſaid Flakes grow in the Mine. 'Tis of an Iron Colour: and has ſome ſmall Filaments of native Copper in it.

l. 33. Native or Virgin Copper. Two Plates, one of them conſiſting of Grains like thoſe of Sand cohering together, and conſtituting a flat Body, or Plate. The other Plate conſiſts of Parts like ſmall Threads. From the ſame Mines with the Flakes. *n.* 31. *ſupra.*

l. 34. Two ſmall Nodules, given me by the Name of *Copper-Stones*, and ſaid to hold $\frac{1}{3}$ Copper. From - - - - - - in *Wales.* Mr. *Baden.*

l. 35. Spar, white, with ſome parts of a lovely green, and bright blue: In others there's a faint Caſt of Purple. It has a little Copper in it, with ſome ſmall Grains of Lead-Ore. From the ſame Mine, at *Nenthead*, with *l.* 8. *ſupra.*

l. 36. Another ſmall Sample from the ſame Mine. Little Copper or Lead diſcover themſelves in this. The Spar much as in the precedent. The blue is very fine, and the Spar, being partly diaphanous, ſhews the Colour paſſes deeper into the Subſtance or interior Parts of it. This differs little from *l.* 9. and is from the ſame Mine at *Nenthead, Cumberland.*

l. 37. A piece of Copper-Ore, of a dusky reddiſh black Colour. Among it is a pretty deal of a yellow ſhining braſſy Marcaſite: with white and green Spar, whereof part is cryſtalliz'd. This is of the ſame ſort, and from the ſame Mine, with *l.* 18. *ſupra.*

l. 38. Copper-Ore, red, with a Caſt of purple. There are ſome Grains of Spar intermix'd with it: and very fine capillary or fibrous Concretions, of a bright green Colour, like thoſe of *l.* 19. From Sir *Coppleſton Bampfield*'s Mine at *Northmolton, Devonſhire.* The Ore lies in the perpendicular Fiſſures. 'Tis in conſiderable plenty. The Ore of this Mine yields $\frac{1}{7}$ of Copper one with another. 'Tis ſold for 6 *l.* 10 *s.* *per* Tun. All of it holds a little Iron; which they free it from by melting ſome ſulphurous or mundick Copper Ore along with it.

l. 39. Another Sample from the ſame Mine, of a dusky reddiſh Colour, with an intermixture of Spar, and a braſſy, or as it is call'd, the *Golden Marcaſite.* Some Parts of this Body ſhine very finely, and are of a beautiful Colour, betwixt a Purple and Blue.

l. 40. Another Sample of the ſame, in which the Spar, Marcaſite, and the purpliſh-blue Parts, are more diſtinct: and ſo appear with more Beauty than in the precedent.

l. 41. Another, as well as the four following, from the ſame Mine. This, excepting a little grey Spar in it, is throughout of a purple Colour, gloſſy and ſhining.

l. 42. This is red on the Outer-parts: but within of a deep grey, gloſſy and ſhining, and much reſembling the Grain of Steel where broken; only the Grain of this is ſomewhat coarſer. From the ſame Mine; it yields $\frac{1}{3}$ Copper.

l. 43. Two ſmall Maſſes, each about the bigneſs of a Hazel-Nut. They are of a dusky green Colour, their Surface is ſmooth, and they appear very like two Drops of a melted Metal. They yield above half Copper. From the ſame Mine.

l. 44. A Piece of Copper-Ore, part of which is of a green, and part of a deep red Colour, 'Tis ſofter and more friable than any of the foregoing. It yields about $\frac{1}{3}$ Copper. From the ſame Mine, at *Northmolton, Devonſhire.*

l. 45. A Copper Marcaſite, with a ſhining braſſy Caſt, in the Middle, but externally brown with a Caſt of Copper. This is cover'd with a very fine florid green æruginous Curſt, ſtriated acroſs, very much like the Cruſts of the Hæmatites, and the Septa of the *Ludus Helmontij*, and about $\frac{1}{12}$ of an Inch in thickneſs. From the *Iſle of Man.* Upon Tryal, in the Fire, I find that the Marcaſite yields $\frac{1}{5}$ of Copper: the æruginous Cruſt $\frac{5}{8}$. Out of a ſmall Drift in a Cliff, in the *Mine-Haugh* in *Kirk Chriſt Ryſhen,* of the South ſide of the Iſle. Theſe Cliffs yield Lead-Ore: of which there are many Tuns now raiſed.

l. 46. Small Pieces of Copper-Ore, green, and very rich: in the middle of each is one, or more Spots, of Copper, very fine, and almoſt, of the natural Colour of that Metal. This Ore, upon Trial, yields $\frac{2}{3}$ of Copper. *Iſle of Man.* Found with the foregoing.

l. 47. Four Maſſes of Copper-Ore, light, porous, and friable: brown within, and externally environ'd with a very thin Coat of green, villoſe or nappy, and not unlike Velvet. Perhaps this may be the *Viride Montanum* of Dr. *Liſter*. *Iſle of Man.* Found with the foregoing.

l. 48. Native Copper, flexible and malleable, in ſmall Maſſes, ſome of which are granulated, others ramoſe. In ſome parts it appears of the native Colour of this Metal: in others, 'tis ting'd with green. Alſo a Piece of Copper-Ore, of a deep brown with a Caſt of red, and Sparks of a very bright native Copper. On ſome Parts of it is a green Ærugo: and on others, a cryſtalliz'd Spar. From the *Iſle of Man,* found looſe upon the Sea-ſhores, near the foregoing; being beat out of the Cliffs by the Sea.

l. 49. Native Copper, with bits of white Spar amongſt it, from *Poldice* Mine, *Cornwall.* The Vein of this lies higher up in the Hill than that of the Tin.

l. 50. Native, or, as 'tis call'd, *Virgin-Copper,* extremely pure, and malleable; from - - - - - in *Cornwall.*

l. 51. Native Copper, fine, flexible, and malleable. *Cheſwater, Cornwall.*

l. 52. Copper-Ore, Part of it black, with a Caſt of red, and Part green. Near *Aſhburn* in the *Peak.*

l. 53. Copper-Ore, green; and amongſt it Cryſtal, part of it pellucid, and part tinged throughout with green. *Hartly, Weſtmorland.* The Emerald owes its green Colour to an intermixture of Copper, and ſo does the Saphire its blue. This Metal aſſumes the one or the other of thoſe Colours according as the Nature of the Matter, with which it incorporates, happens to be. Copper diſſolved in a volatile Alcali, as Spirit of Urine, or Sal Ammoniac, takes a blue Tincture: in an Acid, *e.gr.* Vinegar, ſtrong Aquafortis, or the like, it becomes green. (Pliny *took notice that the Emerald was found in Copper-Mines,* in Metallis ærariis. *Nat. Hiſt. l.* 37. *c.* 5. *p.* 714.)

l. 54. Spar, part grey, and part brown; with green Copper-Ore. Alſo a fine blue Copper-Ore: and amongſt it Cryſtals ſhot into very ſmall Columns of a bright blue Colour. From *Cockly-Beck,* in High *Furneſs, Lancaſhire.* The Saphire owes its Colour to an intermixture of Copper.

l. 55. Copper-Ore, brown, vein'd with blue, and green: and having in one part a Vein of Mundick. Found in a perpendicular Fiſſure, in the *Skrees,* a very high Mountain in *Cumberland.* Upon Tryal it yields $\frac{1}{4}$ Copper. This Vein has not been work'd.

l. 56. Gritty Copper-Ore, green, from *Cheſwater* Mine, *Cornwall.* It lies 25 fathom deep. The Load is one Foot and a half over. 'Tis of difficult Fuſion.

l. 57. Gritty Copper-Ore, green, *Caudbeck, Cumberland.* It is not work'd.

l. 58. Copper-Ore, with a little Tin; from Mr. *Baſſet*'s Mine at *Camborn-Bacon.* It holds about $\frac{1}{8}$ Copper.

l. 59. A Maſs from a conſiderable Vein in a Mountain two Miles from *Goldſcalp*, in *Cumberland.* 'Tis of a dusky Colour, with Spots of green, and blue: as alſo bright ſhining Sparks appearing to be either of Lead or Wadd. This is within a Mile of the Wadd-Mine: and I have ſeen Samples of this Vein that had Specks of Wadd more plain in them.

l. 60. A Marcaſite, externally brown: within of a ſhining braſſy Conſtitution; with Specks of green. *Iſle of Man.* Given me by my Lord *Derby.*

l. 61. Mundick, holding Copper; with white Spar, and Specks of a Copper Colour. It fill'd the Vein: and there are Parts of the Sides of the Vein adhering to the two oppoſite Surfaces of it. Sir *William Penington*'s, *Conyſton-Fells, Lancaſhire.*

l. 62. Mundick, diffuſed in Strings thorough the common Vein-ſtone in the Grand Vein of *Goldſcap, Cumberland.* A Piece, broke off this, upon Tryal with the black Flux, after a ſlight Roaſting, yielded $\frac{1}{6}$ of fine Copper at the firſt running. *Vid.* *i.* 22. *ſupra.*

l. 63. Copper-Ore, of a dark brown Colour near black, with ſome Specks of green. It holds alſo a little Tin. *St. Columb, Cornwall.*

l. 64. A gloſſy Purple Copper-Ore. *Comarten, Devonſhire.*

l. 65. Part of a Pyrites, black, with Veins of yellow and purple. It holds Copper. The Mine was lately diſcovered in the Eſtate of Sir *Thomas Aſton*, at *Nun-Eaton*, in *Warwickſhire.* I obſerved ſeveral of theſe Pyritæ; which were all, in Form oblong, compreſs'd, or flat, growing gradually thinner towards the two oppoſite Edges; in ſuch ſort as pretty nearly to reſemble the Ribs of an Animal*. I can determine nothing concerning their length, having ſeen none but what were broken; but ſome of the Pieces were two Foot long. As to their breadth, I obſerved of all Dimenſions from an Inch to above half a Foot. They lay very cloſe, and in great numbers, in a Stratum of greyiſh Stone: at the Depth of about 20 Foot.

CLASS XI. PART II.

The Ores of Tin.

PREFACE.

This Metal is no where found ſo pure as to be malleable. *Vid.* Agric. p. 421. a. *ſupra.*

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* *In which Form Jet is ſometimes found.* vid. *g.* 30, 31. *ſupra.*

The Tin-ſtones, or Ores, crude, and as taken out of the Mine, yield the richeſt, about 1 *in* 30: *the middling Ores, about* 1 *in* 60: *and the pooreſt, about* 1 *in* 120; *for even ſuch are work'd to ſome ſmall Profit. But when the Ores are dreſs'd, and brought, by ſtamping, and waſhing, to what they call* Black-Tin, *which is the* Ore *clean'd and prepared for the Fire, they yield* ½ *Metal; or, if well dreſs'd, more, perhaps* 5 *in* 8; *which the Tin-Grains yield without any Dreſſing. For theſe are large, and may be eaſily pick'd out from amongſt ſparry, ſandy and ſtoney Matter. Whereas the ſmall Sparks of Tin-Ore require thoſe Methods to ſeparate and extricate them. All Tin-Ores, that are capable of clean Dreſſing, yield pretty much alike when dreſs'd.*

I have ſaid ſomething of the Shoads, trailing down from the Loads, or main Veins of Tin, towards the Sea, in APPEND. II. *to* CLASS I. *ſupra.*

The EXTRACT.

1. *Tin-Mines mention'd in the following Claſs.*

St. Martins-Mine, near *St. Auſtle, m.* 1.
St. Agnes, m. 2.
Trevannas St. Agnes. m. 3.
St. Tuiſt. m. 4.
Redruth. m. 5. 7.
Godolphin-Ball. m. 6. 17.
Poldice. m. 8. 24.
Polgooth. m. 9.
Penroſe. m. 11.
The *Pell, Gunlaus-Works. m.* 12. 22.
Trevala, Redruth. m. 13.
St. Breigh Downs. m. 14.
Carnt Barn. m. 15.
Wheal and Coats Luggon. m. 16.
Carrack-Glooſe Works. m. 18.
Treveddo. m. 19.
Wythyell. m. 20.
St. Columb. m. 21.
Budnoch. m. 23.
Beam-Works. m. 25.
Luggon. m. 26.
Warleggon Downs. m. 27.
Wheal and Crack Works. m. 28.
Carneban Works, m. 29.
St. Twen. m. 30.

2. *The Depth of the Tin-Mines.*

A Mine 200 Foot deep. *m.* 4. 17.
—— 80 Foot deep. *m.* 5. 29.
—— 40 Foot. *m.* 7. 21. 27.
—— 150 Foot. *m.* 9.
—— 20 Foot. *m.* 15.
—— 45 Foot. *m.* 19.
—— 30 Fathoms deep. *m.* 1. 22.
A Mine 40 Fathoms. *m.* 12. 26.
—— 20 Fathoms. *m.* 16. 20.
—— 60 Fathoms. *m.* 18. 23. 30.
—— 10 Fathoms. *m.* 28.
—— 27 Fathoms. *m.* 14.
—— 70 Fathoms. *m.* 8.

3. *Damps in the Tin-Mines. m.* 19.

——— Præſages of Rain. *m.* 19.

4. *Of the Water in the Mines.*

Water in the Tin Veins, not clear. *m.* 17.
——— clear and taſteleſs in the Tin-Veins. *m.* 7, 8, 9, 12, 15, 16, 19, 20, 21, 26, 28, 30.

Water clear, but of a harſh Taſte. *m.* 23.
———reddiſh, and taſting like ruſty Iron. *m.* 14. 18.

5. *Of the Strata of Earth and Stone through which the Tinners mine. m.* 2. *& ſeq.*

Killas call'd *Raze* by the Tinners. *m.* 9.

6. *Of the Tin Loads and Shoads.* Appendix 2. *to* Class I. *ſupra. and m.* 19. *infra.*

A Shoad-Stone. *m.* 10.
Tin-ſtones beaten out of the Cliffs by Storms. *m.* 11.

7. *The Tendency and Direction of the Load.*

A Load running North-Weſt. *m.* 28.
Loads running Eaſt and Weſt, *m.* 3. 4. 8. 14. 18. 21. 23. 25. 26. 27. 29.
The Lead-Veins, in *Cornwall*, run the ſame Way. *n.* 102. 104.
The Iron-Load, North-Weſt and South-Eaſt. *o.* 97.

8. *The Thickneſs of the Vein, or Load of Tin-Ore.*

A Load 4 Inches thick. *m.* 4.
——1 Foot. *m.* 5. 7. 20. 28. 30.
——3 Foot over. *m.* 9. Polgooth.
——2 Foot over. *m.* 18. 26. 29.
—— 15 Inches *m.* 19.
——10 Inches. *m.* 23.
Spar, the Load 2 Foot over, ſtanding by a Tin-Load of the ſame Diameter. *m.* 18.
—— the Load 5 Inches thick, ſtanding by a Tin-Load 2 Foot thick. *m.* 26.

9. *Tin no where found native and pure.* Class xi. Part 2. *Preface.*

10. *The different Proportions of Metal in the various ſorts of Tin-Ores. Ibid.*

Tin Grains yield at leaſt ½ Metal. *m.* 1, 2, 3. 6.
———of a Quadrangular Pyramidal Figure. *m.* 1, 6.
——— call'd by the Miners, *Corns of Tin. m.* 3.

11. *The various other Bodies with which Tin is found incorporated.*

Tin-Ore with black Spar. *m.* 19.
——— with white Spar. *m.* 2. 6. 13. 26.
——— with cryſtalliz'd Spar. *m.* 25.
——— attended with Spar and Corniſh Diamonds. *m.* 18.
——— with Marcaſite or Mundick.
——— with Copper. *m.* 14.
——— with Lead. *m.* 24.

Tin-Ores.

m. 1. Tin-Grains. A Sample fairer than ordinary. Theſe yield above half Tin. This Sample was found thirty Fathom deep in St. *Martin's* Mine near St. *Auſtle.* Mr. *Scobell.* The Grains, or cryſtalliz'd Shoots are Quadrangular, and of a Pyramidal Form.

m. 2. Tin-Ore, grained, or ſhot, of a dusky black Colour, with a little white Spar in it. On the two oppoſite ſides is an earthy Sand, of a Buff-Colour. It ſeems to hold at leaſt one half Tin. St. *Agnes*, *Cornwall.*

m. 3. Tin-Ore. Mr. *T. Lower* collected this, and ſeveral others, for me. His Account of it is as follows. " 'Tis from *Trevanas*, " *St. Agnes*. The Mine is in a Valley, the Ground on every ſide " round, being higher. 'Tis twenty Fathom deep, downright, " to the Load; which runs Eaſt and Weſt. They ſink thorough " only two Strata to come at the Load. The firſt is of a black " Earth, two Foot thick. The ſecond is of white Kellas, down " to the Load. There is much Water in the Shaft, draining " thorough the Walls of the Mine. In the midſt of the Load, in " ſome Places, are hollow Cavities, wherein Tin-Grains are found, " or, as the Miners call them, *Corns of Tin.*"

m 4. Tin-Ore from St. *Tuiſt*. *T. Lower*'s Account. " The Mine " is upon an Hill. 'Tis two hundred Foot deep. There are three " Strata. The firſt is of black Earth, two Foot deep. The ſe- " cond is of a blackiſh Earth, and Sand, mixed together, 6 Foot " deep. The third is a ſort of Growan down to the Load; which " runneth Eaſt and Weſt. 'Tis nine Inches over, and very well " tinn'd. But in ſome Places the Load is not above four Inches " thick."

m. 5. Tin-Ore, from *Redruth*. *T. Lower*'s Account. " The " Mine is in the ſide of an Hill, declining to the Eaſt. 'Tis eighty " Foot deep, down ſtrait to the Load. There are two Strata of " Earth, and then one of Free-ſtone down to the Load. The firſt " Stratum is black Earth two Foot deep; the ſecond is of a yel- " low Earth four Foot deep, diſtinguiſhed from the former " by an horizontal Fiſſure; wherein is a looſe ſort of red ſandy " Matter, with ſome Water draining through it. Next is the " Bed of Free-ſtone, lying flat and level; and the Load is one " Foot over, running Eaſt and Weſt. There is a ſmall Matter of " Water ſoaking out of the Rock or Stone aforeſaid."

m. 6. Tin-Ore, ſhot, in ſeveral Parts, into Grains; of which, all that are diſtinct, appear to be Pyramidal and Quadrangular. There is a light brown Sand, and ſome white Spar, mixed with it. *Godolphin-Ball*, *Cornwall.* Vid. *m.* 17. *infra.*

m. 7. Tin-Ore, holding about one half Tin. From *Wheal-and-Crack*, *Redruth*. *T. Lower*'s Account. " This Mine is in a Valley, " between two Hills. 'Tis forty Foot deep, downright. There " are two Strata, the firſt is of black Earth, two Foot deep. The " ſecond is a ſort of Yelvean Stone, and Earth, mixed together, " down to the Load; with perpendicular Fiſſures from the firſt " Stratum down to the Load. This is one Foot over: and runs Eaſt " and Weſt. There is a Spring of Water that cometh forth by the " Load, as big as a Man's Wriſt, very clear and taſteleſs. In this " Place, in the old Works, fifteen Years ſince, was found an Oak- " Tree, eighty Foot deep, with Branches and Roots, all, beſides " what was periſhed."

m. 8. Tin-Ore, *Poldice.* *T. Lower*'s Account. “ This holds a-
“ bout $\frac{1}{3}$ Tin. The Mine is 70 Fathoms deep downright. The firſt
“ Stratum is of a yellowiſh Earth, four or five Inches. The ſecond
“ Stratum is of white Rubble, and Clay, down to an hundred
“ Foot deep. Then there is a dun Stone which the Miners
“ call *Elvean Stone,* two Foot thick. Then the ſame ſort of
“ Rubble and Clay as before, down to the Load; which runs Eaſt
“ and Weſt, but dippeth away after an End Weſtward. There
“ iſſues forth a Spring of Water as big as a Man's Leg, by the
“ Load, very clear and taſteleſs. The Work is begun in a Valley,
“ but is wrought home to the Shaft aforeſaid by an Adit: and the
“ Water drawn off by Engines.”

m. 9. Tin-Ore, *Polguth.* *T. Lower*'s Account. “ This holds near
“ half Tin. The Works are on the ſide of an Hill. The Surface
“ is of a Raze, and a little red Earth. The ſecond Stratum is of
“ a white Clay, intermixed with this ſort of Raze, as the Miners
“ call *Kellows,* downright, an hundred and fifty Foot deep to the
“ Load; which is three Foot over, very hard, and rich. There
“ is a ſort of Water riſes out by the Load: and runneth Eaſt and
“ Weſt.”

m. 10. A Shoad-ſtone, found near the Surface of the Earth. - - - - *Cornwall.*

m. 11. A Tin-ſtone. This, and others of the ſame ſort are commonly flung upon the Coaſts, near *Penroſe, Cornwall,* by Storms. The Tin-ſtones, which he thinks flung up by the Sea, are moſt probably beaten out of the Cliffs by Storms and Violence of the Sea.

m. 12. Tin-Ore from the Pell, *Gunlaus* Works. *T. Lower*'s Account. “ This Mine is forty Fathoms downright. Here is a ſmall
“ Spring of Water, but very clear and taſteleſs, iſſuing out, by the
“ Load, on the South-Weſt ſide of it, as big as a Man's Thumb.”

m. 13. Tin-Ore, grey, ſparkling, and porous, with a white Spar, in Quantity near equal to the Ore, intermix'd with it. From a Work called *Trevela,* in *Redruth.*

m. 14. Tin-Ore from St. *Breigh* Downs. It ſeems to hold ſome Copper, and about $\frac{1}{3}$ Tin. *T. Lower*'s Account. “ This Mine is on
“ Downs that are near level; having no deſcent in half a Mile or
“ more. The Mine is twenty ſeven Fathoms deep, downright.
“ There are two Stratums. The firſt is of a reddiſh brown Earth,
“ two Foot thick. The ſecond Stratum is red Kellas, down to
“ the Load; which runneth Eaſt and Weſt. There is a Spring
“ of Water, which iſſueth out of one ſide of the Load, as big as
“ a Man's Wriſt. 'Tis of a reddiſh Colour; and the Miners ſay it
“ taſteth like old ruſty Iron. I could not taſte it, it being diſturbed
“ by the Miners. By the ſide of this Load there is a Load of
“ Mundick, four Inches over in ſome Places, in others, more.”

m. 15. Tin-Ore from *Carnt-Barn.* It holds near $\frac{1}{3}$ Tin. *T. Lower*'s Account. “ This Mine is in a Valley, and is twenty Foot
“ deep, downright. They ſink through two Stratums, the firſt is

“ of black Earth, two Foot deep: the ſecond of Sand and Pebles intermixed, down to the Load; which runneth Eaſt and “ Weſt; having a Spring of Water, iſſuing out by the Load, as “ big as a Man's Wriſt, very clear, and taſteleſs.”

m. 16. Tin-Ore from *Wheal and Coats-Luggon.* It holds about $\frac{1}{4}$ Tin. *T. Lower*'s Account. “ This Mine is on Downs that are “ level, and no way declining. 'Tis twenty Fathoms deep, going “ down from Shamble to Shamble. There are over it two Stratums. The firſt is two Foot and a half deep, of red Earth and “ ſmall Stones mixed together; then a white Kellas, down to the “ Load; which is half a Foot over, running Eaſt and Weſt, having a ſmall matter of Water draining out by the Sides, (or as the “ Tinners call it, the *Walls*) of the *Country*,” [Vein, or Load.]

m. 17. Tin-Ore. *Godolphin-Ball.* It holds about $\frac{1}{4}$ Tin. *T. Lower*'s Account. “ The Work is between two Hills: and deſcendeth “ into two Valleys; one on the Eaſt-ſide, the other on the Weſt. “ The Mine is two hundred Foot deep, perpendicular. There “ are two Stratums above it. The firſt is, of two Foot deep, black “ Earth: the ſecond is of white Kellas, down to the Load. There “ is ſome Water in the Mine, but not very clear. The Load runs “ Eaſt and Weſt.” Vid. *m.* 6. *ſupra.*

m. 18. Tin-Ore, from *Carrack-Glooſe* Works. It holds about $\frac{1}{3}$ Tin. *T. Lower*'s Account. “ This Mine is on an Hill, and is “ 60 Fathoms deep: there are three Stratums over it. The firſt “ is black Earth, one Foot deep, (or thick.) The ſecond Stratum is of white Kellas, four Foot thick. Then an horizontal “ Fiſſure, and under it, a brown Stone 7 Inches thick. Then a “ Stratum of red Kellas down to the Load. On the South ſide “ of the Load is a Load of Spar, full of *Corniſh* Diamonds. The “ Load of Tin is two Foot over, and runneth away Eaſt and Weſt. “ The Load of Spar, is two Foot over, running parallel with the “ former. 'Tis hollow in ſome Places, where the Diamonds are. “ There is a Spring of Water, iſſuing forth by the Load of Spar, “ and Tin Load. The Spring is as big as a Man's Wriſt; and in “ Winter bigger than a Man's Leg, but of a red Colour: and of “ taſte like old ruſty Iron. The Hill is as high as *Bow-Steeple* “ perpendicular. On one ſide, 'tis bounded with the Sea; the other “ running into a deep Valley.”

m. 19. Tin-Ore, from *Treveddo.* *T. Lower.* “ It lies 40 or 50 “ Foot deep from the Surface of the Earth. The Work is on an “ Hill, very ſteep, 200 Paces, perpendicular, to the bottom, where “ runs a pretty large River. I went under Ground 150 Paces, or “ farther; it having been very much wrought in old time. The “ Surface is nothing but a ſort of Rubble and Moſs. The ſecond “ Stratum is of a blackiſh ſandy Earth. Then a perpendicular Fiſſure “ of a kind of a black Spar, ſome Places Tin in it, and ſome Places “ none. It leads from the ſecond Stratum down farther than I “ could go; even under any Working. The third and laſt Stratum, is white Sand and Clay intermixed one with the other.

And Fiſſures or Veins are croſſed one over the other in the Bottom, and run every way. Some are one Inch and a half over, others two or three, to 12 or 15 Inches over. The firſt the Miners call Strings, the latter they call the Load, which is commonly beſt tinned. There is Water in this Work, altho' on ſuch an Hill, which iſſueth out of the Load, and round about it. This Water runs and finds a Way through the Earth. If there be, in any Mine, a Paſſage or Cavity in the Earth to receive the Water, then there is a good Air, and good working for the Men. If not, there happens many times unwholeſome Air, and *Damps*; which not only impair their Health, but take away even their Life, as I have been informed by ſeveral Tinners, who have been in Mines where ſuch Damps have happened; and ſome of the Men have died immediately in the Mines. Nay, ſome who have thus informed me, have themſelves lain for dead for a conſiderable Time. In ſome Works, Damps happen where there is no Water. Great Damps come forth of the Earth, they ſay between the quick and dead Earth. Theſe Damps have a very nauſeous ſmell, and in a Moment take away a Man's Breath, if he venture to go up or down through the Shaft. They happen moſt frequently in Fenny-Ground: and are great *Preſages of Rain*. I was told by a Miner, who ſeemed to be a ſenſible Perſon, that he ſaw a Man wound up out of a Tin-Shaft, dead to all appearance, but they rolled him (as their manner is) and his Body jerked and twitched on the Earth, like one poiſoned, and ſo died."

m. 20. Tin-Ore, from *Wythyell*. *T. Lower*'s Account. "This Mine is on a plain Downs. 'Tis 20 Fathoms deep, downright. There are two Stratums. The firſt of black Earth, two Foot thick. The ſecond Stratum conſiſts of red Kellas, down to the Load. The Load is a Foot over: and runneth Eaſt and Weſt. There is, in this Mine, a ſmall matter of Water, which the Miners call *the Soaking of the Country*."

m. 21. Tin-Ore, from *St. Columb*. It holds near half Tin. *T. Lower*'s Account. "This Mine is on a plain Downs, with no Deſcent for a great way. 'Tis 40 Foot deep. There are two Stratums. The firſt is of black Fen Earth, a Foot and an half deep. The ſecond is white Clay, and white Spar, mixed together down to the Load; which runneth Eaſt and Weſt, dipping away toward the Eaſt: and there is a ſmall Spring of Water iſſuing out by the Load."

m. 22. Tin-Ore, from *Gunlas-Works*. It holds about $\frac{1}{3}$ Tin. *T. Lower*. "This Work is on the ſame Hill with *Carrack-Glooſe*. There are, over the Load, but two Stratums; the firſt is of black Earth, one Foot thick. The ſecond is only of white Kellas and white Clay, down to the Load. The Shaft is 30 Fathoms deep, downright. The Load runs Eaſt and Weſt; and is one Foot over, without any Water."

m. 23. Tin-Ore, from *Budnock*. It holds about $\frac{1}{4}$ Tin. *T. Lower*'s Account. " This Mine is on a Hill as high as *Bow-* " *Steeple*. The Mine is ſixty Fathoms deep, downright. There " are three Stratums; the firſt of black Earth, four or five Inches " deep. The ſecond is of brown Earth, three Foot deep. Then " ſmall Pebles three or four Inches deep, mixed with a blackiſh " Earth. Then a red Earth, and ſmall Kellas, down to the " Load. This runneth Eaſt and Weſt, being ten Inches over. " Here is a ſmall Spring of Water which ariſeth not by the Load, " but out of the middle of the Draught, out of a perpendicular " Fiſſure; wherein is a ſort of Spar, which runs down from an " Horizontal Fiſſure. The perpendicular Fiſſure is at the Top " not above two Inches over; but groweth bigger all the way " downwards. So that at the bottom, it is ſeven or eight Inches " over; and the Water that iſſueth out of this Fiſſure, taſteth " hard, but is very clear."

m. 24. Tin-Ore. *Poldice*. This, beſides Tin, ſeems to have Lead in it.

m. 25. A thin Vein of Tin-Ore, with cryſtallized Spar; found fifty Foot deep, in *Beam-Works*, The Load runs Eaſt and Weſt. *T. Lower*.

m. 26. Tin-Ore, with Spar, from *Luggon*. *T. Lower*'s Account. " This Mine is on the Top of a great Hill, declining on all Parts, " except on the Weſt-ſide, where it runneth away, for a Mile, " on a Level. But on the Eaſt, North, and South, it runs down " into Valleys, but in ſome Places in a Perpendicular, as high as " *Bow-Steeple*; where there run forth Brooks of Water. The " Mine goes down ſtrait, about forthy Fathoms; where the Load " lies Eaſt and Weſt; and is two Foot over. There iſſueth out, " by the Load, a Spring of Water as big as a Man's Wriſt. It " cometh from the Weſt; and on the South-ſide of the Tin-Load " is a Load of Spar, about five Inches thick, in ſome Places " pretty clear, There are three Stratums: The firſt is black " Earth two Foot thick. The ſecond is of red looſe Earth, three " or four Foot thick. Then there is an Horizontal Fiſſure of Spar, " four or five Inches over. Laſtly, all white Kellas, and white " Clay, down to the Load. "

m. 27. Ore, holding about $\frac{1}{8}$ Tin, from *Warleggon-Downs*, about forty Foot deep. The Surface is of black Fen-Earth, 12 or 13 Inches thick. The ſecond Stratum is of Sand, mixed with Earth. The third Stratum is of great Rocks of Moor-ſtone, and Sandy-Earth, repoſited together, down to the Load, which runs Eaſt and Weſt. It lieth on a Hill.

m. 28. Ore, holding about $\frac{1}{8}$ Tin, from *Wheal* and *Crack*-Works. This Mine is on the ſide of a Hill. 100 Paces to the Bottom. The Shaft or Mine goes downright; and the firſt Stratum is about two Foot deep, being a black Fen-Earth. The ſecond Stratum is of Kellas, down to the Load, being ten Fathoms deep; and runneth away North-Weſt. The Load is one Foot over; and a Spring of Water iſſues out by the Load: But the Water is carry'd away by an Adit, which is brought from the Bottom.

m. 29. Ore, holding about $\frac{1}{5}$ Tin, from *Carneban-Works.* There are two Stratums. The firſt is black Earth, ſixteen Inches deep. The ſecond is of white Kellas, down to the Load. The Mine is eighty Foot deep; the Load two Foot over, and runs Eaſt and Weſt.

m. 30. Ore holding about $\frac{1}{4}$ Tin, from *St. Twen.* This Mine is ſixty Fathoms deep downright. There is, over the Load, two Stratums. The firſt is of black Fen-Earth, two Foot deep. The ſecond is a blackiſh Elvean Stone, down to the Load. There is Water draining in, within ſeven Foot from the Surface of the Earth. The Load dippeth away toward the Eaſt, and is a Foot over, being very rich in ſome Places.

CLASS XI. PART III.

The Ores of Lead.

PREFACE.

Lead-Ore has obtained various Names: 1. From its Colour; Blue Ore, Grey Ore, White Ore. 2. From its Conſtitution and Texture; Capillary, Fibroſe or Stringy Ore, Striated or Antimoniated Ore, Steel-grain'd Ore, Sparkling or Star-grain'd Ore, Broad-grain'd or Smooth-grain'd Ore, Croſs-grain'd Ore, Diced, Cubic, or Teſſellated Ore. 3. From its Form; Flat, Plated, or Rib Ore, that ever ſtands Edgeways or Parallel to the Sides of the Vein, Looſe Lumps or Booſe Work; of which, thoſe that are ſo large as to require to be broke for the Furnace, are called Knockings; thoſe that are cover'd with any extraneous Matter, are called Coated Ore; thoſe that are clear and free, Naked Ore. 4. From the Place in which 'tis found; Vein Ore, Belly Ore, Float Ore. 5. From its Uſe; Potters Ore. Several other Names have been given at random, by the Miners of ſeveral Countries; of which ſome are hereafter exhibited. Indeed, when this Catalogue comes to be review'd, the Names appropriated to ſeveral Lead-Ores, eſpecially thoſe Sorts that are brighter, and neareſt reſemble that Metal, ought to be corrected. Thus, there are ſeveral Samples that are called by the Miners, Potters-Ore, and enter'd under that Name. Whereas, in truth, that Name ought not to be reſtrain'd to one Sort of Ore, ſince the Potters uſe all ſorts indifferently, that are clean, or have the Appearance of Lead, and melt freely. Such indeed, may have the generical Name of Potters-Ores, or, as they are ſtyled in ſome Countries, Blue Ores. And theſe may be ſubdivided into the three following ſubordinate Species. 1. The Sparkling or Star-grain'd Ore; ſuch as that n. 34. 2. *Broad-grain'd or Smooth-grain'd Ore; ſuch as that, n.* 42. *n.* 112. *And* 3. *The Croſs-grain'd Ore; ſuch as that, n.* 104. *and* *n.* 107. *n.* 75. *and the Ores that follow, are better diſtinguiſh'd than ſome of the Precedent.*

The great or ſmelting Works commonly come up to the Aſſays of Lead within 1 *in* 20.

Lead-Ores.

EXTRACT.

I. *The Names and different Sorts of Lead-Ores.*

Talky or Stoney Lead-Ore. *n.* 17.

Potters-Ore. *n.* 64, 73.

—— or, as the Miners call it, *Blue-Ore. n.* 82.

Potters, or Broad-grain'd, or Smooth-Ore. *n.* 42, 90, 111, 112, 118.

Broad-ey'd Lead-Ore. *n.* 110.

Croſs-grain'd Lead-Ore. *n.* 103, 104, 105, 107.

Star-grain'd Ore.

Honey-comb Lead-Ore, *Mendip. n.* 37.

Shelley-Ore. n. 106.

Small-grain'd Lead-Ore. *n.* 113.

Striated or Antimoniated Lead-Ore. *n.* 113.

Steel-grain'd Ore. *n.* 21, 69.

—— or Galena, as this Kind is called by *Pliny*, and the Mineraliſts who follow him. *n.* 21.

White Semipellucid Lead-Ore. *n.* 58.

White Foliaceous Lead-Ore. *n.* 74.

Whitiſh Squamous Lead-Ore, call'd by the Miners *White-Ore. n.* 82, 83, 84.

White Fibrous Lead-Ore, call'd by the Miners, *Stringy-Ore. n.* 54. *& ſeqq.* 71, 72, 75, to 81.

—— reſembling *Saccharum Saturni. n.* 81.

—— lies above the Potters-Ore, at *Nenthead* in *Cumberland. n.* 54.

—— rare at *Barrow-Work, Cumberland,* but found along with the Potters-Ore, at all depths, where there is room for it to ſhoot. *n.* 75.

Lead-Ore, diced or cubic. *n.* 7, 120. *& ſeqq.*

—— found in Vacuities, of the perpendicular Fiſſures. *n.* 120, 132.

—— the Cubic Figure is owing to Cryſtal incorporating with the Lead. *n.* 132.

Lead-Grains ſo pure as nearly to approach the Fineneſs of Virgin Lead. *n.* 62, 63.

—— call'd by the Miners *Diced-Ore. n.* 63.

Lead-Ore ſo pure and rich as almoſt to come up to the Purity of Native-Lead, being free from Spar and other extraneous Mixture. The Miners call this *Naked-Ore. n.* 127.

II. *The Manner in which Lead-Ores lie in the Earth.*

Lead-Ore found in the Veins, or perpendicular Fiſſures of the Strata. *n.* 27. *& ſeqq. n.* 112, 116, 118.
—— brought thither out of the Bodies of the Strata, by Water.
—— ſometimes borne thence, and hurry'd into Springs and Rivulets by the Water, which proceeding out of thoſe Veins, forms and ſupplies thoſe Springs and Rivulets. *n.* 131.
A Lead-Vein eight Inches over. *n.* 104.
—— one Foot over. *n.* 102.
The Lead-Veins in *Cornwall* run Eaſt and Weſt. *n.* 102, 104. as the Tin-Veins there do. *Vide Extract of* CLASS X. PART 2. §. 7.
Lead-Ore, with part of the Stone of the ſide of the Fiſſure to which it grows, *n.* 95, 96, 97.
—— with part of a thin Rider of Stone in it. *n.* 96, 119.
—— concreted, in Grains, on a dusky grey Stone, part of a Rider. *n.* 119.
Potter's Ore, part of a Rib. *n.* 12, 81,* 97, 98, 106, 112, 115, 124, 125, 126.
—— Part of a Rib that fill'd a String. *n.* 106.
Booſe-Work or Naked-Ore found in Lumps. *n.* 60, 61.
Lead-Ore lying in a Float. *n.* 65.

III. *The Fuſion or Melting of Lead-Ore.*

The Smelters come up to the Aſſayers, within 1 in 20. *Pref. to* CLASS XI. PART 3.
Of the ſmelting Works in *Arkendale. n.* 108.
Mendip Green-Ore runs with the greateſt difficulty in the Fire, the white fibrous Lead-Ores with the greateſt freedom of any in *England. n.* 49, 54.

IV. *The different Proportions of Lead in the ſeveral Ores.*

Potter's-Ore, *Arkendale*, holding $\frac{3}{4}$ Lead. *n.* 111, 112, 114.
—— *Flintſhire*, holding $\frac{2}{3}$ Lead. *n.* 45.
—— *Workſworth*, $\frac{5}{8}$ Lead. *n.* 40, 41, 42.
—— *Auſtin Moore*, $\frac{5}{8}$ Lead. *n.* 64.
—— *Sodbury*, yielding $\frac{5}{8}$ Lead. *n.* 27.
Common Lead-Ore, *Mendip*, $\frac{1}{2}$ Lead. *n.* 29, 30, 33, *& ſeqq.*
Croſs-grain'd Ore, holding $\frac{3}{4}$ Lead. *n.* 107.
Steel-grain'd Ore, holding near $\frac{1}{2}$ Lead. *n.* 20, 26.
—— holding near $\frac{2}{3}$ Lead. *n.* 21.
—— holding $\frac{1}{3}$ Lead. *n.* 22.
Richmond, Diced-Ore, $\frac{2}{3}$ Lead. *n.* 63.
Fibroſe Lead-Ore, yielding $\frac{2}{3}$ Lead. *n.* 54, 56.
Squamoſe or White-Ore, yielding $\frac{1}{3}$ Lead. *n.* 82, 83, 84.
Mendip Green-Ore, $\frac{1}{2}$ Lead. *n.* 49.
Caldbeck, Green-Ore, yielding $\frac{1}{4}$ Lead. *n.* 52.
Gritty Lead-Ore, yielding $\frac{1}{3}$ Lead. *n.* 87.

V. *The Proportion of Silver in the Lead of different Mines.*

Devonſhire, Steel-grain'd Ore, a Tun yielding 30 Ounces of Silver, *n.* 20.

The Company's *Welch* Mines, Steel-grain'd Ore, a Tun, yielding 30 Ounces of Silver. *n.* 21.

Potters-Ore, near *Holy-Well, Flintſhire*, 18 Ounces *per* Tun. *n.* 45.

Dovegang, Potters-Ore, yielding upon trial, but 4 Ounces of Silver *per* Tun. *n.* 26.

Lead, of the Talky-Ore, *Wales*, a Pound yielding 14 Grains of Silver. *n.* 17.

VI. *Combinations of the different Sorts of Lead-Ore each with other: and of Spar, Marcaſite, Calamine, and other Minerals, and Metals, with Lead-Ore.*

Fibroſe Lead-Ore concreted on Potters Lead-Ore, *n.* 81*, 85, 86.

Potters Lead-Ore in Lumps, cover'd over with a Cruſt of white Spar and Fibroſe Lead-Ore, call'd by the Miners *Coated-Ore*. *n.* 81†.

Lead-Ore with white Spar. *n.* 19, 22, 25, 26, 46, 47, 66, 67, 73, 90, 103, 104, 105, 107, 123.

—— with a pellucid Spar cryſtalliz'd. *n.* 7, 68, 93.

—— with a pellucid cubic Spar. *n.* 8, 59.

—— with a grey Spar. *n.* 1.

—— with a yellow Spar, that Colour proceeding from Lead incorporated with it. *n.* 5.

—— with purple or iron Spar, and with green or copper Spar. *n.* 2, 5, 6, 8.

—— with Spar, white, purple, and yellow. *n.* 92.

—— with Spar and Talc. *n.* 17.

—— with Cauk. *n.* 89, 95, 96, 112, 116.

Lumps of Lead-Ore in a Rib of Cauk. *n.* 129, 130.

Cauk incorporated with Lead-Ore, forced off the Vein by Water, worn, rounded, and brought forth into a Rivulet. *n.* 131.

Lead-Ore abounding in Arſenic. *n.* 82, 83, 84.

—— with Marcaſite. *n.* 123.

—— with a gloſſy ſulphurous Marcaſite ſhot into ſmall Cubes. *n.* 16.

—— with yellow Mundick. *n.* 103, 104, 108.

—— with Calamine. *n.* 28, 49, 50.

Steel-grain'd Ore, with Antimony. *n.* 18, 19, *19, 22, 38, 113.

Lead-Ore with Copper-Ore. *n.* 48, 74, 104.

VII. *The various Depth at which Lead-Ore is found in the Mines.*

A Lead-Mine, *Mendip*, 15 Fathoms deep. *n.* 28.

—— 20 Fathoms deep. *n.* 30.

Row-Pits are the deepeſt on *Mendip*. The Lead-Ore is there found from 8 to 30 Fathom deep. *n.* 37.

A Lead-Mine, *Charan-Math-Coh, Cornwall*, 10 Fathoms deep. *n.* 104.

—— *Perran-Sands*, 80 Foot deep, *n.* 102.

—— *Dovegang*, the deepeſt of any in the Peak, being upwards of 60 Fathoms. *n.* 26.

A Lead-Mine *Richmond-Moor, Yorkſhire,* 11 Yards. *n.* 63.
——— in *Richmondſhire,* 71 Yards deep. *n.* 67.
Potters-Ore, *Flintſhire,* found from 15 to 30 Fathom deep. *n.* 45.

Lead-Ores.

n. 1. A piece of a coarſe, greyiſh, ponderous Spar, with a thin Plate of Lead-Ore, adhering to part of it. From *Cumberland.* Mr. *Nicolſon,* ſince Lord Biſhop of *Carliſle.*

n. 2. White Spar, with a faint Caſt of purple and green. There's Lead-Ore incorporated with it, *Cumberland.* Mr. *Nicolſon.* Thoſe two Colours in the Spar are Signs of ſome ſmall admixture of Iron and Copper with it.

n. 3. Another Sample, in which the Purple is ſtronger. From the ſame Mine.

n. 4. Lead-Ore, of the Potters ſort, lying very fair, and diſtinct, in Spar white, with a ſlight reddiſh Caſt. *Cumberland.* Mr. *Nicolſon.*

n. 5. Lead-Ore in a white or ſemi-pellucid Spar, with a Vein of a yellowiſh Caſt, and another of purple. Thoſe two Colours are owing to an admixture, the yellow of Lead, the purple of Iron, incorporated with the Spar. *Cumberland.* Mr. *Nicolſon.*

n. 6. Lead-Ore in a ſemi-pellucid white Spar, with a very fine green Spar, that Colour being owing to an admixture of Copper, incorporated with it. *Workſworth* in the *Peak.*

n. 7. Lead-Ore, part of a large Cube, having upon it a white pellucid Spar cryſtalliz'd. *Cumberland.* Mr. *Nicolſon.*

n. 8. Lead-Ore, with a pellucid Spar curiouſly ſhot into ſmall Cubes. From - - - - in the *Peak.*

n. 9. Lead-Ore in a coarſe white Spar, the Grains or Maſſes of both large. From *Workſworth* in the *Peak.*

n. 10. Lead-Ore in a like Spar, but the Grains of both leſs. From *Muggleſworth-Park,* in the Biſhoprick of *Durham.* A Tun of this Lead yields 60 Ounces of Silver. *Vid. n.* 25. *infra.* I have ſeen Lead-Ore, incorporated with Spar, exactly after the manner of this, from *Shildon,* near *Blanchland,* in the Biſhoprick of *Durham.*

n. 16. Lead-Ore, of the Potters ſort, very fine, incorporated with a yellow gloſſy ſulphurous Marcaſite, part of which is ſhot into ſmall Cubes. From St. P's Work, *Cornwall.* Mr. *Crow.*

n. 17. Lead-Ore, with Talc, and a little Spar, equally mix'd with it. It holds about $\frac{1}{10}$ of Lead. From - - - - - - in *Wales.* Mr. *Kemp.* A Pound Weight of the Lead reduced out of this Ore, yields about 12 or 14 Grains of Silver. This the Miners call a *Talky* or *Stoney-Ore.*

n. 18. A Maſs conſiſting of white Spar, a greeniſh yellow Marcaſite, Antimony, and Lead, of that ſort the Miners call *Steel-Ore,* all pretty equally intermix'd. From - - - - - - - - in *Devonſhire.* Sir *Hen. Northcote.*

n. 19. Lead-Ore, holding a little Antimony, and of Lead about $\frac{1}{8}$, being very poor. *Tepar's* Work, *Cornwall.*

n. 19*. A Sample of like ſort, with an Admixture of white Spar. It holds Lead, Antimony; and, as 'tis ſaid, Silver. From *Birch-Bank* in *Blackburn*, *Cumberland*.

n. 20. Ore, very ſparkling, of the Steel-Grain. It holds near half Lead, ſome Antimony, Marcaſite, Talc: and, as 'tis ſaid, a little Tin. The Lead yields, of Silver, 30 Ounces *per* Tun. From *Ziras-Newton*, near *Exeter*, in *Devonſhire*.

n. 21. Ore of the fineſt Steel-Grain. It has in one place a fine ſoft Caſt of Purple, Blue, and Braſs. 'Tis the richeſt I ever ſaw of this Mine, and holds $\frac{2}{3}$ Lead. It has a little Silver in it; the Lead yielding 13 Ounces *per* Tun. Sir *Carbery Price*'s Mines at - - - - - - in *Cardiganſhire*. This anſwers the Deſcription that the Mineral Writers give of that ſort of Lead-Ore, yielding alſo Silver that they call *Galena*.

n. 22. Ore of the ſame ſort, tho' the Grains be not quite ſo fine. There's with it a little white Spar, and Antimony. It holds $\frac{1}{3}$ of Lead: and about 3 Penny W^{t}. of Silver in a Pound. [In the Spar of this Mine, ſometimes Virgin Silver appears in ſmall Plates and Threads.] From *Comarten*, *Devonſhire*.

n. 23. Ore of the ſame ſort, only the Grains yet larger, with ſome of the Potters-Ore adhering to it. From *Oden-Mine*, under the Mount call'd *Mamm-Tor*, in the *Peak*.

n. 24. More of the ſame ſort, but the Grains ſtill larger, with an Admixture of a coarſe white Spar. It may hold about $\frac{1}{6}$ Lead: There's a little Marcaſite Matter in it. From - - - - - - in *Cheſhire*.

n. 25. Another Sample, with the Grains larger than the foregoing, and not unlike that which the Miners call the *Star-Grain-Ore*. It may hold about $\frac{1}{3}$ Lead. There's a white ſemipellucid Spar mix'd with it. From *Muggleſworth-Park*, in the *Biſhoprick of Durham*. Vide *n.* 10. ſupra.

n. 26. Lead-Ore, with an Admixture of white Spar. It yields above one half Lead. *Workſworth*, in the *Peak*. *Dovegang* is the deepeſt Mine in the *Peak*, and upwards of 60 Fathoms. Of all the *Peak-Lead* that I have known tryal made, none yields, of Silver, above 4 Ounces *per* Tun. There's little Steel-grain'd Lead-Ore found in the *Peak*.

n. 27. Lead-Ore, in a thin flat Form, being taken forth of a ſmall perpendicular Fiſſure (which it fill'd) of a grey Stone. In a Mine near *Sodbury*, *Glouceſterſhire*. It yields $\frac{5}{8}$ Lead.

n. 28. Lead-Ore, of the ſame Form, likewiſe from a ſmall Fiſſure which it quite fill'd. 'Twas at about the depth of 15 Fathom. 'Tis as rich as the precedent. From Major *Twiford*'s Work, at *Chuton*, *Mendip*. *Somerſetſhire*. On each flat of this, is a brown Mineral Concretion, appearing to be Calamine.

n. 29. More of the ſame; from other like Fiſſures, to one ſide of which this Ore adhered. The ſame Mine. This yields $\frac{1}{2}$ Lead.

n. 30. Another flat piece, but thicker, from one ſide of a Fiſſure of the ſame Mine, 20 Fathom deep. It is found in great quantity, and holds above $\frac{1}{2}$ Lead, but little Silver; on one ſide are Veſtigia of the Rock to which it adhered, on the other various Protuberances. The Ore here, uſually adheres to both ſides of the Fiſſure: and, in the middle, is frequently a Drift of Clay, from 2 or 3 Inches to a Foot, nay ſometimes 2 Foot thick. The different manner of the ſeveral ſucceſſive Applications or Plates of the Lead ſucceſſively incruſting on the Rock, is very obſervable in this Sample.

n. 31. 32. Two Pieces ſomewhat thicker; they were found 4 Foot deeper, adhering to one ſide of the ſame Fiſſure.

n. 33. This Sample has more Protuberances, and ſome of the Clay interſperſed with it, from the ſide of another Fiſſure of the ſame Mine. This yields near $\frac{1}{2}$ Lead.

n. 34. Part of a ſtill thicker Piece of ſparkling or ſtar-grain'd Lead-Ore, with an admixture of Clay or Earth, found deep in the ſame Mine. *Qu.* Whether the brown and grey Matter adhering to this, be not Calamine? This yields near $\frac{1}{2}$ Lead.

n. 35. Another, the Surface of the Tubercles cruſted over with a thin coarſe Spar. At near the ſame depth, in thoſe Mines. Near $\frac{1}{2}$ Lead.

n. 36. Lead-Ore, florid, with many Protuberances, and an admixture of white Spar. Out of a Fiſſure of a Lead-Mine - - - - *Mendip*, near $\frac{1}{2}$ Lead.

n. 37. Lead-Ore, thick ſet with Tubercles, and ſeveral Pores or Intervals. The Miners call it *Honey-Comb-Ore*. There's a great deal of earthy Matter, of a ruſt Colour, in its Intervals, and on the Surface of the Tubercles. This ſort of Ore is found in the perpendicular Fiſſures of the Stone, in vaſt quantity, from 8 to 30 Fathom deep. From *Row-pits*, in *Chuton* Liberty, *Mendip*. *Row-Pits* are the deepeſt on *Mendip*.

n. 38. A Maſs of Lead-Ore that ſeems to have lain in the hollow of ſome Stone. Its Surface being unequal, and having Fragments of Stone adhering in almoſt all Parts of it. It may hold about $\frac{6}{10}$ Lead; and a little Antimony. From - - - - in the *Peak*.

39. Another, of the Potters-kind. There's a whitiſh ſparry Matter adhering to a large Part of the Surface of it. From - - - - in the *Peak*.

n. 40. Potter's-Ore, from *Workſworth* in the *Peak*. It holds near $\frac{5}{8}$ Lead; but little Silver.

n. 41. Potters-Ore, as rich as the former. From *Hartly-Caſtle*, *Weſtmorland*.

n. 42. Broad-grain'd, or ſmooth-grain'd Potters-Ore, from *Winſter* in the *Peak*. As rich as either of the foregoing.

n. 43. Potters-Ore. From - - - - in *Northumberland*.

n. 44. Potters-Ore, having a talky Spar (of a greyiſh Colour with a green Caſt) adhering to it. From - - - - in the Biſhoprick of *Durham*. Sir *William Blacket*.

n. 45. Potters-Ore, from the Lord Biſhop of *St. Aſaph's* Mines in *Flintſhire*. 'Tis found in vaſt quantity, from 15 to 30 Fathom deep in the perpendicular Fiſſures of the Strata of Stone. It holds full $\frac{2}{3}$ Lead; but ſcarce any Silver. Indeed there is but one Mine in this County, that affords Silver worth working: and that lies near *Holy-Well*, yielding 18 Ounces per Tun.

n. 46. Potters-Ore, with a Vein of white Spar paſſing through the middle of it. From a Lead-Mine at *Penroſe*, near *Kelſtone*, in *Cornwall*.

n. 47. Lead-Ore, with a little white Spar adhering to it. From Sir *Thomas Standiſhe*'s Mines at *Dukesborow* in *Lancaſhire*.

n. 48. A Piece of Lead-Ore, flat, having fill'd a String, or ſmall Vein; with a little Spar adhering, and Copper-Ore on one ſide green, and yellowiſh on the other. From - - - - in *Cheſhire*.

n. 49. Lead-Ore of a Popinjay green Colour. 'Tis cavernous and porous, and has a little Calamine of a reddiſh brown Colour, in its Caverns. It yields $\frac{1}{2}$ Lead; but hardly any Silver. This ſort is found in conſiderable quantity from two to fourteen Fathom deep, both in the Strata, and in the perpendicular Fiſſures. Mr. *Baden*, from *Blagen-Hill, Mendip*. The Calamine Mines are very near. They ſmelt this green Ore, in a reverberatory Furnace, with the Coal of *Mendip*; running old Iron with it to imbibe the Sulphur. This is of the hardeſt Fuſion, and the fibroſe Ores, *n.* 54, 55, 56. the ſofteſt Lead-Ores we have in *England*.

n. 50. Another Sample, not ſo Cavernous, with Calamine mix'd with it. In this ſmall Grains of Lead diſcover themſelves to the Eye. From the ſame Mine. This is of a pale green, and more inclining to a yellow.

n. 51. Another of a Sea-green Colour, its Surface ſtudded with ſeveral Tubercles. From the ſame Mine.

n. 52. Another of the ſame ſort, of a yellow Colour, with a mixture of green. There's a little white Spar amongſt it. It yields $\frac{1}{4}$ Lead. From *Caldbeck, Cumberland*.

n. 53. Potters Lead-Ore. There adheres to it a friable Body of a ruſt Colour, with ſeveral ſmall ſparkling Grains in it. From the Lead-Mines at *Brickhillburn*, near *Nent-head, Cumberland*. Mr. *Nicolſon*.

n. 54. Lead-Ore of a browniſh Colour, conſiſting chiefly of ſhort fibrous or capillary Bodies, variouſly diſpoſed throughout the Maſs, the whole nearly reſembling a coarſe *Saccharum Saturni*. From the ſame Mine with the former. This lies in great quantity, at the top of the Mine, before they come to the Water. Underneath is Potters-Ore. This is my Lord *Darwentwater*'s Mine; and is one of the moſt conſiderable in *England*. This and the two following run eaſily in the Fire. Theſe fibrous Ores yield, at the great Works, rarely above 8 in 20. It holds more Lead indeed; but, being of gentle Fuſion, ſome of the Metal drives up with the Fire. They have no Sulphur, nor Arſenic in them: nor any Silver at all. This yields, on Aſſay, $\frac{1}{2}$ Lead.

n. 55. Another Sample, of like fibrous or capillary Texture, and different in nothing from the former, only 'tis of a blackiſh hue. From the ſame Mine ſtill.

56. Another, very curious, the capillary Bodies of a pale Straw-colour, diſpoſed into numerous Faſciculi, variouſly diſpoſed and laid upon one another. 'Tis very rich, yielding at leaſt $\frac{2}{3}$ Lead, tho' nothing like that Metal appears in the whole Maſs, it much more reſembling a Spar than a Lead-Ore. 'Twas found in *Barrow-work*, a Mine in an high Mountain, near *Keſwick*, in *Cumberland*. There are in it Specks of a yellow Matter, which probably are Sulphurous: and there is Mundick in the Veins of both this and the neighbouring Mountains.

n.57. Lead-Ore, flakey, and ſtriated, the Striæ parallel to each other. 'Tis white, with a ſlight Eye of yellow. Its whole Appearance is like that of a Spar, and nothing like Lead appears, tho' it be very rich of that Metal. From - - - - near *Briſtol*. Mr. *Cole*. "*Vena plumbi apud Ubios candida, fluoribus candidis non pellucidis* "*ſimilis*." J. Kenteman. *Nomenclat. Foſſ. Miſniæ*. p. 83.

n.58. Lead-Ore, white and ſemi-pellucid, appearing much like a clear Flint, both in Texture, Diaphaneity, and all other reſpects. From *Mendip*, in *Somerſetſhire*. Mr. *Kemp*.

n.58 *. Another Sample from the ſame Place. This is intire, in form of a Nodule, tranſparent. The exterior Surface is a little rough. To the Eye 'tis no ways different from the common pellucid Pebles; but 'tis very ponderous, and rich of Lead. "*Vena plumbi candida fluoribus candidis pellucidis ſimilis: copioſe* "*dives ex centenario enim fiunt libræ plus quàm ſexaginta plum*-"*bi*." J. Kenteman. *N. Foſſ. Miſn*. p. 83.

n.59. Potters-Lead-Ore, adhering to a Ball of white talky Spar. The Spar conſiſts of ſmall flat roundiſh Plates wedg'd together in a very obſervable manner. Near the Lead are ſeveral ſmall Cubes of a more clear and cryſtalline Spar. 'Twas found in a Bed of Clay, 44 Fathom deep, in a Lead Mine at *Hartly-Caſtle* in *Weſtmorland*.

n.60. Lead-Ore in Form of a Nodule, very fine, and rich, yielding above half Lead. It conſiſts of fine thin Plates differently diſpoſed, and variouſly reflecting the Light. Found together with the following, *n. 61*.

n.61. Another, with a thin rough grey Cruſt covering it, thorough which the Lead appears. Theſe form'd Lumps are very rarely found. This lay 36 Fathom deep in Clay. There were ſome others along with it, from the Size of a Hazle-Nut to that of a Man's Fiſt. The Miners call this *Naked-Ore*. There was of the common Lead-Ore, in vaſt quantity, above theſe in a perpendicular Fiſſure, but none deeper; theſe Lumps lying at the Bottom of all. The Miners ſunk deeper to ſearch, but to no purpoſe. From *Reeves's* Works, in *Chartereux* Liberty, *Mendip*. The Lumps are of the ſame ſort with thoſe that they call in *Yorkſhire*, *Booſework*; which are found there both in the perpendicular Fiſſures, and in the Bellies.

n. 62. Two Samples of Lead-Grains, ſo pure and fine, as to be near malleable. 'Tis ſhot into Figures, with plain ſides, in manner of Cryſtal, but not regular. From - - - - - in *Cumberland*. Mr. *Nicolſon*.

n. 63. Another Sample of the ſame ſort, tho' the Lead be not quite ſo pure. The Shoots in this are larger than in either of the former; the Planes of ſome of them being above half an Inch over. Thoſe Planes are of different Figures: the Workmen call this ſort *Diced-Ore*. 'Tis found in the perpendicular Fiſſures of the Stone of the Mines, the Lumps of it being from the Bigneſs of a Wallnut to that of a Man's Fiſt. This lay about 11 Yards deep. From Colonel *Byerlye*'s Mines, on *Richmond-Moor*, 2 Miles Weſt of *Richmond, Yorkſhire*. It yields at leaſt $\frac{2}{3}$ Lead.

n. 63 *. A Sample of the ſame Ore, and out of the ſame Mine. This has but little Lead in it; the far greater part of the Maſs conſiſting of a white granulated ſoft Spar. The Grains are made up of a Congeries of ſhort Fibres. In this Spar alſo there may be ſome Lead; that Metal ſometimes affecting to ſhoot into ſuch like Fibres, as in *n.* 54. *& ſeq.*

n. 64. A Piece of Lead-Ore, of the Potters kind, found in a perpendicular Fiſſure. *Thorngill* Lead-Mine, about a Mile from *Auſtin, Northumberland*. The *Auſtin-Moor* Potters-Ore yields Lead and Silver, much in the ſame Proportion with the Potters-Ore in the *Peak*. *Conf. n.* 26. *ſupra*.

n. 65. Another, little different, found in a Stratum of the ſame Mine. This Stratum of Lead was in one part about a Foot thick, and lay fairly in view for about 30 Yards, but grew leſs gradually till it came to the thickneſs of about 3 Inches. What is here call'd a Stratum, was, probably, rather a *Float*.

n. 66. Another, not different, only that it has a little white Spar mix'd with it. From *Blay-gill* Lead-Mine, which is near the former.

n. 67. Another, with a pretty Quantity of white Spar lying in Veins among it. From Mr. *Bathurſt*'s Mine, *Arkendale*, in *Richmondſhire*. It lay in the bottom of the Mine, 71 Yards deep, in the middle of a perpendicular Fiſſure, two Foot over, amongſt an earthy Matter.

n. 68. Another, in nothing different, but that the Spar in ſome places is ſhot into ſmall Cryſtals: alſo from Mr. *Bathurſt*'s Mine.

n. 69. A piece of Lead-Ore of that ſort which the Miners call *Steel-Ore*. From *Hays*, two Miles Eaſt of *Auſten, Northumberland*.

n. 70. Another, of the ſame Grain, with ſmall Veins of white Spar in it. This is very brittle, and in a manner friable. From a Mine 24 Miles South-Weſt of *Auſten*.

n. 71. A piece of Lead-Ore, but much reſembling a white Spar. It is thick ſet with ſmall Cavities, over the whole Surface of it. Being broken in one place, it appears compos'd of ſmall parallel Fibres. From the ſame Mine with *n.* 58. *ſupra*.

n. 72. Another, of the ſame ſort, and from the ſame Mine. This is more diaphanous than the former, the Cavities paſs deeper into the Body of it, and the Fibres lie in Sheafs, which variouſly interſect and croſs one another.

n. 73. Lead-Ore of the Potters kind, with white Spar amongſt it. From Sir *Copleſton Bamfield*'s Mines at *North-Moulton, Devonſhire.*

n. 74. A white talky Spar, with a flat Baſe, riſing to an Apex, almoſt in manner of a Cone, only the Apex is not over the Center of the Baſe, but verges towards one ſide of the Body. 'Tis three Inches over at the Baſe, and near as many in height being compoſed of Plates ſtanding erect, and jetting from the Axis to the Surface of the Cone. 'Tis very ponderous, and doubtleſs contains Lead in it: as alſo a little Copper, whereof the green Spots at the Baſe are a Sign. *Great-Aſhby, Weſtmorland.*

n. 75. A Piece of the capillary, fibrous, or, as the Workmen call it, *ſtringy Ore*, from the ſame Vein in *Barrow-Work, Cumberland* with that *n.* 56. from which it differs only in Colour, this being ſomewhat whiter. There are in it Specks of a yellow Matter: and Veins of grey; both probably Marcaſite, or Sulphur. This ſtringy Ore is found but rarely. It grows at all depths of the Vein, in Hollows, where there is room for it to ſhoot, along with the Potters-Ore; which, with the croſs-grain'd Ore, are the common Ores of this Mine.

n. 76. Some Faſciculi of Ore of the ſame ſort with the foregoing: adhering to Part of the Stone of the end of the Stratum on the ſide of the Fiſſure. From the ſame Mine.

n. 77. A large Piece of the ſame ſort, from the ſame Vein; with a conſiderable Quantity of the abovemention'd (*n.* 75.) yellow Matter amongſt it.

n. 78. Another, leſs, with the Faſciculi ſmaller. From the ſame Vein.

n. 79. Another, with a reddiſh gritty Matter interſperſed. From the ſame Vein.

n. 80. Another, with part of the Faſciculi white, part brown, and part black; little different from that *n.* 55. From ſtill the ſame Vein in *Barrow-Work.*

n. 81. Another, little different from the foregoing; only on one ſide is a reddiſh gritty Matter, and ſeveral ſmall capillary Bodies, much like *Saccharum Saturni.* Alſo from the ſame Vein.

n. 81*. Part of a Rib of Potters-Ore, on the outſide of which is a thin Cruſt, compoſed chiefly of the white capillary Lead-Ore, from ſtill the ſame Vein.

n. 81†. A Lump of very fine Potters-Ore; with the Surface covered all over with a thin Cruſt, compoſed partly of white Spar, and partly of the white capillary Lead-Ore. The Miners call it *coated Ore.* 'Twas found, among many others, ſome bigger, and ſome leſs, lying looſe, ſometimes in Clay, ſometimes in an ochreous Matter of ſeveral Colours, call'd by the Miners *Soyls*, in the aforeſaid Vein at *Barrow-Work.*

n. 82. Lead-Ore, whitiſh with a Caſt of brown; compoſed of ſmall Chips, or Plates; placed, ſome parallel, ſome croſs to one another. From Gravel-Work, near *Buckton*, in *Craven*, *Yorkſhire*. The Miners call this *white Ore*. It holds ſomewhat more than $\frac{1}{3}$ of Lead. It lies in a Vein, and is found in vaſt Quantity, there being little Ore of any other kind, except here and there ſome of the *blue Ore* as they call it, or Potters-Ore. This white Ore abounds in Arſenic: and is the moſt poiſonous and noxious of any Ore whatever; the Fumes and Flores, lighting upon the Graſs, kill the Cattle to near a Mile's diſtance from the Smelting Works.

n. 83. Another Sample, little different, only that there are intermix'd Specks of a pale yellow Matter, which I take to be Arſenic. And there is in it a Vein of mineral Matter, partly Red, and partly Brown. From the ſame Mine.

n. 84. Another, alſo from the ſame Vein, gritty, and appearing like a Maſs of white ſhining Sand. There are in it Grains of a black gloſſy Matter.

n. 85. *White Lead-Ore*, little different from *n.* 82. with Potters-Ore amongſt it, from the ſame Vein.

n. 86. Another Sample, alſo from the ſame Vein, but of a more dusky Complexion. 'Tis likewiſe much more firm and compact: and ſeems to be very rich. There is in it a Maſs of Potters-Ore.

n. 87. Gritty Lead-Ore, variegated with white, yellow, brown, and black; yielding $\frac{1}{3}$ Lead. From *St. Iſſy*, *Cornwall*.

n. 88. A Maſs of Lead-Ore, the Grain and Texture not unlike that of Cauk, of a pale brown Colour, and very ponderous. The Workmen call it *white milled Lead-Ore*. From *Erkergall*, *Montgomeryſhire*, *Wales*.

n. 89. Potters-Ore, in a Maſs of brown Cauk: with a reddiſh glittering Spar adhering to it. From a Vein in *Newlands*, *Cumberland*.

n. 90. Broad-grain'd, or Potters-Ore, with much white Spar intermix'd. *Moulds*, *Arkendale*, *Yorkſhire*.

n. 91. Croſs-grain'd Ore; with white Spar, part of it cryſtalliz'd. Out of a Vein, *Newlands*, *Cumberland*.

n. 92. Lead-Ore, in Spar, part of it white, and part tinged with purple, the reſt with yellow, *Arkendale*.

n. 93. Lead-Ore, that adhered to the ſide of a Vein; with white Spar, and many ſmall Shoots of Cryſtal along with it. *Arkendale*.

n. 94. A Plate of Lead-Ore that grew to the ſide of a Vein. To the oppoſite ſide of it adheres a coarſe Spar, very tuberous and ragged; ſuch as is commonly called by the Miners *Hungerſtone*; becauſe when it runs forth and ſprouts in this manner, there muſt be much room in the Vein, and conſequently little Ore there. *Arkendale*.

n. 95. Lead-Ore, with white Cauk: this was affix'd to a ſide of the Vein, part of which ſtill adheres to it, the ſaid ſide being compoſed of a common dusky brown Limeſtone, of which many of the Strata of this Mine conſiſt. *Arkendale*.

n. 96. Lead-Ore, vein'd alternately with Ore and Cauk. From the ſame Mine. This has alſo adhering to it a Chip of the ſide, of Lime-ſtone: and in the middle of it, Edges of two thin Riders of the ſame ſort of Stone.

n. 97. Two parallel Ribs of Lead-Ore, united by Intervention of Spar. On one Part, are *Veſtigia* of the ſide of the Rock, to which it adhered; on the other, is a Cruſt of grey glittering Spar. *Moulds, Arkendale.*

n. 98. Part of a thin Rib of Lead-Ore, with ſparry Efflorescencies on each ſide. *Arkendale.*

n. 99. Lead-Ore with Spar. From the ſide of a Vein. *Newlands.*

n. 100. Lead-Ore in Sparks, in grey Spar. There was much richer in the Vein, which was very large. *Howden-Field, Northumberland.*

n. 101. Lead-Ore, very coarſe. *Comſomluck-Hill, Wales.*

n. 102. A Lump of Lead-Ore, from *Peran-Sand, Cornwall.* The Mine is 80 Foot deep. The Load is one Foot over; and runs Eaſt and Weſt. Mr. *Kingſton.* I have made no trial of this; but ſuſpect it to have in it more of *Blende*, or black Talc, than of Lead.

n. 103. Croſs-grain'd Lead-Ore, incorporated with yellow Mundick. From *St. Columb, Cornwall.*

n. 104. Croſs-grain'd Lead-Ore, with Mundick, and green Copper-Ore. From *Charan-Math-Coh-Works, Cornwall.* The Load is eight Inches over, and runs Eaſt and Weſt. This lay ten Fathom deep.

n. 105. Croſs-grain'd Ore. This was part of a Rib that fill'd a String. *Newlands.*

n. 106. Part of another Rib, from the ſame Mine. When the Rib is thus thin, 'tis call'd *Shelly-Ore.*

n. 107. Croſs-grain'd Ore, very fine, and holding near $\frac{3}{4}$ Lead. *Barrow-Work, Cumberland.*

n. 108. Ore of much the ſame ſort, but not ſo rich, with Spar and Marcaſite in it. *Windegg, Arkendale.* This is the only Mine in *Arkendale* that has Sulphur with the Ore. They run it without any Addition of Iron; and indeed nothing is uſed in any of the Smelting-Mills, for any of the Ore of *Arkendale,* but Wood, Peat, or Coal.

n. 109. Lead-Ore gloſſy and ſhining, formerly work'd for Silver, by the *Hochſtetters. Caudbeck, Cumberland.*

n. 110. The beſt *Broad-ey'd* Lead-Ore, from Sir *H. Mackworth*'s Mine, *Wales.*

n. 111. Broad-grain'd, or Potters-Ore, fine and clear. Holds near $\frac{3}{4}$ Lead. *Moulds, Arkendale.*

n. 112. Another Maſs, part of a Rib, with Cauk adhering to one ſide of it. From a Vein, or perpendicular Fiſſure, *Moulds, Arkendale.* 'Tis rich, and holds near $\frac{3}{4}$ Lead. Indeed the Ore of this Work, if well dreſs'd, yields one with another, above $\frac{2}{3}$ Lead in the Smelting-Works. This is of the Broad-grain'd or Smooth-grain'd Ore.

n. 113. *Small-grain'd* Lead-Ore, holding Silver, *Comarten.* 'Tis ſtriated, as if there was ſome Antimony in it.

n. 114. A very hard ſtubborn Lead-Ore. *Nuton St. Syres, Devonſhire.*

n. 115. Sparky Lead-Ore, little different from the Steel-grain'd. 'Tis in two Ribs join'd: out of a String. *Newlands.*

n. 116. Sparks of Lead-Ore, in a grey ſtony Matter; found in a Vein. *Howden-Field Northumberland.*

n. 117. Steel-grain'd Lead-Ore, with Cauk, part white, and part greeniſh. Sent by the Name of *Silver-Ore, from the Silver-Mine in* Beeralſton, Devonſhire.

n. 118. Broad-grain'd Lead-Ore, with the Surface very tuberous and unequal, out of a Vein. *Arkendale.*

n. 119. Grains of Lead-Ore, growing on a dusky grey Stone, that was part of a Rider. From the *Moulds, Arkendale.*

n. 120. Lead-Ore ſhot into Cubes, and oblong Squares, put together in ſuch manner as to form a Plate or flat Body. It ſtood on edge, in a Vacuity of a Vein. *Totter-Gill, Intacks-Nook, Arkendale.*

n. 121. Another Plate from the ſame Vein, the Squares larger.

n. 122. Lead-Ore ſhot into Squares. The greater part of the Vein is thus ſhot, from a Mine of my Lord *William Pawlet:* I think it is called *Hindrake,* near *Redhurſt,* in the *North-Riding* of *Yorkſhire.*

n. 123. Lead-Ore very fine, ſhot into a multangular Figure, with Marcaſite and Spar, in a Mine by *Stainmore.*

n. 124. Part of a Rib, very ponderous, fine, and rich, probably holding Silver. The Grain of it is in moſt Parts much ſmaller and finer than that of the common Steel-grain'd Ore. The Surface of this is pretty ſmooth. From a Vein in *Totter-Gill-Intacks, Arkendale.* Upon Trial of part of this, it yielded $\frac{3}{4}$ Lead.

n. 125. Part of another Rib from the ſame Vein. The Surface is more rugged and tuberous. There are in it ſmall Maſſes of the Potters kind interpoſed; but the main of the Body is ſtriated, as if there were Antimony in it.

n. 126. Part of another, from the ſame Vein, with a Cauky Spar adhering to each Flat of it. The Grain of this is like that of *n.* 124. *ſupra*: but the Tubercles on the Outſide of both this and *n.* 125. are of a Broad-grain'd Ore, and differ from that, in the middle of the Bodies.

n. 127. Lead-Ore, the pureſt and richeſt I ever ſaw; part of it being ſo very near the Conſtitution of melted Lead, that it may not unfitly be call'd Native Lead. This the Miners call *Naked-Ore,* as they do all other Kinds that are thus naked, and not covered with an extraneous Cruſt. *Arkendale.*

n. 128. A Lump of Naked Ore, extremely rich; found, lying looſe and independent in a Vein, *Arkendale.*

n. 129. Part of a Rib of whitiſh Cauk, out of a Vein with ſmall Lumps of very rich Lead-Ore incloſed in it. All the Ore I obſerved in this Vein was of like ſort, and lay in like manner. *Ruthberry-Foreſt. Northumberland.*

n. 130. Five Lumps of the ſame Ore beat out of the Cauk. Their Surfaces are entire: and they part from the Cauk in ſuch manner, as to ſhew that the Lumps of Ore are diſtinct, and not incorporated or mingled promiſcuouſly with the Cauk, as is uſual in the common Ores.

n. 131. Four Maſſes of a whitiſh cauky Spar, with Grains and Veins of Lead-Ore in them. Theſe are rounded and worn ſmooth. They were found in a Rivulet, in *Arkendale*; and were probably born forth of the Veins of the neighbouring Mountains, by the Water riſing out of thoſe Veins.

n. 132. Lead-Ore of the Potters-kind, very fine. There is incorporated with it ſeveral Maſſes, of a white friable Subſtance, form'd into ſmall Plates ſet edgeways; as alſo very numerous cubic Cryſtals, ſome of them tranſparent, but having a Caſt of yellow; others opake, having their exterior Surfaces black, and ſome few brown. This was taken up at the depth of about 30 Foot, in a Vein of a Mine of Mr. *W. Hodgkinſon*, near *Aſhover*, in *Scarſdale, Derbyſhire*. That the Ore of any Metal ſhoots, proceeds, generally, meerly from Cryſtal, combining with it in the Concretion and Formation of the Maſs. Cryſtal, pure, and without Mixture of other Matter, concretes ever into an hexagonal Figure, pyramidal or columnar, terminating in an Apex or Point. Mineral or metallick Matter concreting with it, frequently determines it to other Figures peculiar to the Diſpoſition of each Kind of that Matter. Iron concreting with Cryſtal, determines it to a rhomboid Figure [*]: Tin, to a quadrilateral Pyramid [†]: Lead, to a Cubick [‡]. Where the mineral or metallick Matter thus concreting with the Cryſtalline, is equally diffus'd throughout the Body of it, and in ſo ſmall Quantity as not to be perceived by the Eye, the Body continues ſtill near as tranſparent as Cryſtal. Where the mineral or metallick Matter is in greater Quantity, ſo as to take the Eye, the Body appears imbu'd and tinctur'd with the Colour, that the Mineral or Metal concreting with it, naturally gives and imparts; and is finer or higher, and more ſaturate, in proportion to the quantity of the mineral or metallick Admixture. 'Tis to this, that all the ting'd Cryſtals, and the various ting'd Gems, owe their Colours. Lead incorporating thus, imparts a yellow; Tin, a black; Copper a blue or green; Iron, a purple, amethyſtine, and all the various ſorts of Red. Where the mineral or metallick Admixture with the Cryſtalline happens to be ſuperior, and in ſo great quantity, as wholly to render the Body Opake: and all ſhot or angular Foſſils that are Opake, owe their angulated Figure chiefly to the Cryſtalline or harder gemmeous Matter, incorporated with them. No other Matter, that I have ever ſeen, concreting into ſuch Figures; except, ſometimes, a little Sulphur: of which there are Inſtances in ſome Pyrites and Marcaſites. This Maſs, *n.* 132. rightly reflected upon, exhibits ſome Phænomena that atteſt this Doctrine; and numerous other Inſtances there are, among the Bodies of this Catalogue, that give further Proof of it: to ſay nothing here of the Obſervations and Experiments in my other Papers, that favour and make it out.

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[*] *o.* 19. [†] *m.* 1. [‡] *n.* 59, 120, 132.

CLASS XI. PART IV.

The Ores of Iron.

PREFACE.

There are ſome Ores in Germany *that anſwer the Load-ſtone; inſomuch that, when finely powder'd, all the Iron leaves the Earthy Parts of the Ore, and applies itſelf to the Magnet.* Laz. Erckern. L. 4. c. 21.

Iron is rarely found pure in the Earth, ſo as to be malleable. vid. Agric. L. 5. p. 421. *ſupra.*

From the Hæmatites, *and ſome other Iron-Ores, are prepared ſeveral Medicines that are in frequent uſe; tho' I confeſs, I cannot approve of them.*

Iron-Ores.

EXTRACT.

I. *Names uſed, by the Miners, to diſtinguiſh the ſeveral ſorts of Iron-Ores.*

Bruſh Iron-Ore. o. 22, 24.
Smitt, o. 95*, 96. —— alſo the *Mother of the Mine. o.* 96.
Iron-Stone, call'd by the Miners, *Cabala-Vein. o.* 3.
—— *Gentle Pit-Ore. o.* 4.
—— *Ball-Vein. o.* 5.

II. *The various Bodies work'd for Iron. Their Origin, Texture, Conſtitution, and Figure.*

The Geodes, and other cruſted Bodies work'd for Iron. *o.* 1, 5, 6, 7, 102.
Iron Nodules in form of the Ludus Helmontij. *o.* 29, 30, 31, 32, 104, 105, 106.
Iron Nodules ally'd to the piped waxen Vein.
Iron-Ore, ſoft, and in form of Clay. *o.* 95, *95, 96.
Yellow Ochreous Bodies, yielding Iron. *o.* 2.
Yellow-Ochre in the Iron-Veins. *o.* 12.
—— in the Iron Geodes. *o.* 102.
Red Ochreous Iron-Earth. *o.* 62, 63.
Red-Ochre in the Iron-Veins. *o.* 13.
Iron-Stone. *o.* 3, 4, 5, 8, 34, *& ſeq.* 103.

Hæmatites,

Hæmatites, Iron-Ore. *o.* 42. *& ſeq.*
—— compos'd of Cruſts made up of tranſverſe Fibres, like thoſe of the fibrous Talcs. *o.* 42. *& ſeq.*
Hæmatites ſometimes form'd in Fiſſures, in the Foreſt of *Dean. o.* 11, 26.
—— in *Cornwall. o.* 75.
Hæmatites having in it cubic Hollows, ſeeming to be Impreſſions of a cubic Spar, Pyrites, or other like Body. *o.* 47, 49, 50.
A Cruſt of Spar betwixt two Cruſts of Hæmatites. *o* 7, 8.
Iron-Ore ſhot into quadrilateral Pyramids, as if it held Tin; the Grains of that Metal being naturally in that form. *o.* 82.
—— ſhot into Rhombs, *o.* 16, 18, 19.
—— with Shoots and Effloreſcencies ſomewhat reſembling Erica, or the common Heath. *o.* 85.
Iron Stalactitæ, found with the ſparry, in the perpendicular Fiſſures, and form'd, after the ſame manner, by Water, bringing the ferreous Particles out of the Strata into the Fiſſures, where it quits them, after, by its falling, as by an Icicle, it has diſpos'd them to concrete into that form. *o.* 20, 21, 22.
—— ſeveral united in one Faſcis; and, for that Reaſon, call'd Bruſh Iron-Ore. *o.* 22, 24.
—— ſmall, black, join'd in a Faſciculus, each ſtriated from the Axis to the Surface. *o.* 26.
—— with ferreous Rhombs upon them. *o.* 25, 27.
The Iron Stalactitæ continue to be form'd to this day. *o.* 23.
Iron-Ore breaking in manner of a Flint, of like compact Conſtitution, and ſtriking Fire. *o.* 101.
Ferruginous Threads in Iron-Ore, ſeeming to be Native Iron. *o.* 11.
Iron-Ore, in a perpendicular Fiſſure, ſo rich as nearly to approach the Conſtitution of Native Iron. *o.* 81.

III. *The Place and Manner in which Iron-Ore is found.*

Iron incorporated with the Sand conſtituting the Stone of the Strata. *o.* 3, 4, 5, 8, 34, *& ſeq. o.* 103.
Iron-Ore form'd in perpendicular Fiſſures. *o.* 16, 19, 60, 81.
—— a Load 3 Foot over, at *Temple*, in *Cornwall. o.* 97.
—— running North-Weſt, and South-Eaſt. *o.* 97.
Smitt found in Veins or perpendicular Fiſſures. *o.* 96.
Hæmatites lies in Bellies. *o.* 60.
An Iron Shoad-Stone, from the Peak, *o.* 41.
—— from *Cumberland. o.* 100.

IV. *Other Bodies incorporated with Iron-Ore.*

Iron Nodules with *Lac Lunæ* in the Shrinks or Cracks. *o.* 104, 105.
Iron-Ore with Spar. *o.* 11, 12, 84.
—— with bright ſparkling Spar. *o.* 101.
—— with cryſtalliz'd Spar. *o.* 12, 13, 14.

—— with a reddiſh glittering talky Spar. *o.* 28.

—— with Spar white with a Caſt of Red. *o.* 98.

—— with Cryſtals tinged red. *o.* 60, 61.

—— with Marcaſite, called by the Miners in *Cornwall, Cockle.* *o.* 99.

—— with a braſs-like ſhining Marcaſite, holding Copper. *o.* 99.

—— with Lead-Ore. *o.* 10, 12.

—— with fibrous Talc. *o.* 74.

Iron-Stone with a Vein of Coal in it. *o.* 36.

—— with the Bodies call'd Screw-ſtones in it. *o.* 93.

—— with Sea-ſhells in it. *o.* 4, 36, 38, 39, 40.

Hæmatites with Spar cryſtalliz'd, ſemipellucid with a Tincture of red. *o.* 55, 59.

V. *The Uſes of theſe Bodies.*

Of the Uſe of Hæmatites in Medicine. Preface to this Part.

Smitt us'd for a red Colour, by Painters. *o.* 95 *.

The Uſes of Iron and of Steel are too many to be enumerated.

VI. *The Proportion of Iron in the various Kinds of Ores.*

Of the Fuſion and ſmelting of them.

Iron-Stone, yielding $\frac{1}{4}$ Iron. *o.* 34.

—— yielding $\frac{1}{3}$ Iron. *o.* 3.

Hæmatites, the richeſt of Iron-Ores, yielding $\frac{12}{20}$ of Metal. *o.* 42.

The Geodes and other cruſtated Bodies run pretty freely in the Fire. *o.* 1.

Of the ſmelting of the Hæmatites Iron-Ore. *o.* 42.

Iron-Ores.

o. 1. A ſmooth flat Body of a browniſh yellow Colour, about an Inch in breadth. From ----- in *Suſſex.* Mr. *Harris.* 'Tis of a hard ſtoney Conſiſtence: and ſcarcely holds above $\frac{1}{6}$ Iron. It ſeems to have been a Nucleus, and included in a ſtoney Cruſt. Indeed this, and ſeveral of the Bodies work'd for Iron in *Suſſex*, appear to be of the ſame Conſtitution with the Geodes and Bezoar Mineral. *Vid. o.* 5, 6, 7. *infra.* That likewiſe from *Derbyſhire, o.* 7. is of the ſame Conſtitution. The *Suſſex* Ores run pretty freely in the Fire for Iron-Ores; otherwiſe they would hardly be worth working.

o. 2. Another larger, and paler, as alſo ſofter, and indeed only an Ochre. This ſeems alſo to have been a Nucleus: and has Fragments of two ferruginous Cruſts within one another, ſtill adhering to it. They are about $\frac{1}{12}$ of an Inch thick: and hold Iron. There is wedg'd into the Middle of it a Plate of about the ſame thickneſs, and much the ſame Conſtitution and Colour. From *Battle*, in *Suſſex.*

o. 3. A piece of Stone flat, of a dusky brown Colour, with a ſlight Bluſh of red. 'Tis ſaid to be pretty rich in Iron. The Miners call this *Cabala Vein.* *Battle* in *Suſſex.* This yields $\frac{1}{3}$ Iron. *Conf.* *o.* 103. *infra.*

o. 4. Another, of a ſomewhat paler Colour. This has ſeveral ſhining Sparks throughout the Body of it, which probably are Grains of Spar intermix'd with thoſe of the Stone. 'Tis a Piece of a Stratum: and in one part of it are many Fragments of ſome ſort of ſmall Bivalve. It holds ſcarcely ſo much Iron as the former. They call it *Gentle-pit Ore. Battle, Suſſex.*

o. 5. Another broad flat Piece, gradually leſſening towards the Edges. The interior Subſtance of it is of a brown Colour, the exterior a browniſh yellow. There are Fragments of thin Cruſts of a ferruginous Colour adhering to the Surface of it. This yields near as much Iron as *n.* 3. They call it the *Ball-Vein, Battle* in *Suſſex.*

o. 6. Another, likewiſe gradually thinning towards the Edges. 'Tis of a brown Colour. There are Fragments of five Cruſts of a ferruginous Colour, tho' ſome darker, and others paler, one over another, adhering to it, each about $\frac{1}{10}$ or $\frac{1}{12}$ of an Inch thick. From *Battle* in *Suſſex.*

o. 7. Another, of an Iron-grey Colour, its Surface brown. There was a Cruſt upon it of a ferruginous Colour, and about $\frac{1}{4}$ of an Inch thick, which eaſily parted off from it. This holds but little Iron. From *Smally,* in *Derbyſhire.*

o. 8. A Piece of Stone of a dark Iron-grey Colour, but in ſome Parts of a ferruginous Colour. There are many extremely ſmall metalline Sparks mix'd throughout the Body of it. This ſeems to hold about $\frac{1}{4}$ Iron, being more ponderous than any of the foregoing. From - - - - - *Staffordſhire.* There are thick Strata of this Stone. It lies about 15 Fathom deep over the Coal.

o. 10. Iron-Ore, ſaid to hold alſo a ſmall admixture of Lead. The interior Subſtance is of a grey Colour, ſhining: the Surface of a ruſt Colour. From - - - - near *Torbay, Devonſhire.*

o. 11. Iron-Ore, of a dark ferruginous Colour, but in ſome places tending towards a yellow, and in others towards a white. There appear ſeveral ſhining ſparry Sparks throughout the Body of it. In the middle of it is a Chink, or Hollow, lined with a ſhining Cruſt ſtriated a-croſs, like the Cruſts of the Hæmatites, and appearing to be of the ſame Nature. There are ſeveral Threads of a ferruginous Colour, and ſeeming to be native Iron. There were other Pieces that had the ſame kinds of Cruſts very plain. From *Cloverwall,* in the Foreſt of *Dean, Glouceſterſhire.*

o. 12. Iron-Ore, of a ferruginous Colour, having a great Quantity of white Spar incorporated with it. There are ſeveral Chinks in it, all lined with cryſtalliz'd Spar, of a *yellowiſh Caſt.* (*Conf. o.* 13. *& o.* 20.) From the ſame Mines. I obſerved a *yellow Ochre,* in ſmall Quantities, in ſome of the Veins of theſe Mines: and the Ruſt of the Iron of ſome Mines, is of a brown Colour, verging upon a yellow. Tho' that Colour may be owing to Lead incorporated with the Cryſtal that conſtitutes that Stone; becauſe of the Colour of Litharge, and of *Vitrum Saturni.* This is certain, there is Lead in this Neighbourhood.

o. 13. Iron-Ore of a ferruginous Colour, but in ſome Parts of a light brown. Throughout the whole Subſtance of it are extreme ſmall Sparks of a gliſtering Spar. There are in it ſeveral Chinks, all beſet with a cryſtallized Spar, which in ſome is white, in others diaphanous, in others yellowiſh, in one brown, and in another red. The Maſs near this Chink is of a lively deep red Colour, and heightens the nearer it approaches the Chink, which beſides the Spar has a fine bright red Ochre in it. From the ſame Mines.

o. 14. Another Piece, of an Iron-grey Colour, full of Hollows beſet with a diaphanous cryſtalliz'd Spar. From the ſame Mines.

o. 15. A piece of Iron-Ore of a ferruginous Colour. Throughout the Subſtance of it are ſeveral thin Plates, of near the ſame Colour, placed parallel to each other. The Intervals of theſe Plates are, in ſome places, fill'd with the ſaid Iron-Ore, in others with a diaphanous Spar. From a Fiſſure of the Stone in the ſame Mines.

o. 16. A piece of the Stone of the ſame Mines, of a yellowiſh brown Colour, an arenaceous friable Subſtance, and with ſome white Spar mix'd with it. 'Twas broken from the ſide of a perpendicular Fiſſure. There are adhering to it ſmall white ſparry cryſtalliz'd Bodies, of ſeveral ſides, in vaſt numbers. Theſe, for the main, are placed in Rows, parallel to each other, and generally ſet each, in a thin ferruginous Socket. There are amongſt them ſome Cryſtallizations of a rhomboid Figure. They are about $\frac{1}{12}$ of an Inch in Diameter, wholly opake, tho' the Surfaces be polite and ſhining, ſome of an Ochre, others of a ruſt Colour.

o. 17. Another, found together with the former, and little different from it.

o. 18. Iron-Ore of a deep ferruginous Colour, with Veins of a white and yellowiſh Spar. In it are ſeveral Cells beſet with Cubes or Rhombs, not different from thoſe in *o.* 16. only that they are all of a ſomewhat deeper ruſt Colour from the ſame Mines.

o. 19. Stone of the ſame ſort with that *o.* 16. from the ſide of a perpendicular Fiſſure. There's upon it an Irony Cruſt, having an Admixture of Spar with it; and from that Cruſt riſes a ſtriated Subſtance, partly of a ferruginous, and partly of an ochreous Colour, in Texture much reſembling rotten Wood. Upon this, grow many of the aforeſaid Rhombs, of a light ferruginous Colour. Some of the Rhombs, near the Cruſt, being broken, ſhew that they conſiſt of two Parts; there being in the Centre a greyiſh ſparry Rhomb, included in a ferruginous rhomboid Caſe. From the ſame Mines.

o. 20. Small roundiſh Columns of a dark brown Colour, placed near a Parallel to one another, and cemented together by a white Spar with a yellowiſh Caſt. The Outſides of the Columns, I mean the Sides that terminate at the Surface of the Sheaf or Faſcis of Columns, are froſted over, or thick ſet with ſmall Sparks of a cryſtalliz'd Spar with a yellow Caſt. Still from the ſame

Mines. This was found in an hanging Poſture in a perpendicular Fiſſure; and the Columns are no other than ſeveral Stalactitæ, partly ferreous, and partly ſparry, run into one Body and conjoin'd together.

o. 21. Another found in the ſame Poſiture; and in the ſame Fiſſure, but three Yards diſtance. This is little different from the former, only ſome of the Columns are red; and the ſparry Froſt without more pellucid, and without any Caſt of yellow.

o. 22. Other like parallel Columns, conſiſting of a Mixture of Iron-Ore, and Spar of a very dusky brown Colour without, but ſomewhat more pale within. 'Twas found in another Fiſſure in a hanging Poſture, adhering to a reddiſh Stone, part of which is broke off with it. In the ſame Mines. This is what is called *Bruſh-Iron-Ore*. The Columns are of about the Thickneſs of a midling Gooſe-Quill.

o. 23. Another Sample, little different from the former, only the Columns are ſomewhat more diſtinct, found hanging in like manner from the Roof or Top of the Vault of an old Work now deſerted. The Ore was exhauſted; and theſe Bodies are grown ſince the Miners left off working this Mine. There are a great many of theſe hanging from the top of the ſame Vaults.

o. 24. Another, the Columns ſomewhat leſs, rougher and more uneven in their Surface, and of a lighter brown Colour. They leſſen gradually as they deſcend, 'till at laſt they end in an Apex or Point. There are a few angular Cryſtallizations, not different in Subſtance or Colour from the reſt of the Body, on the Outſides of ſome of the Columns. From the ſame Mines, and hanging down in the ſame manner.

o. 25. Another, the Columns of a lighter brown, with a larger Admixture of Spar in them. The Outſides of them are ſet all over with Cryſtallizations of the ſame Colour, all tending towards a rhomboid Figure. Found in the ſame manner, in thoſe Mines alſo.

o. 26. Another, chiefly of a black Colour. The Columns are broken off ſhort, and are of the thickneſs of a Crow's-Quill. Within, they appear very black and ſhining, and are ſtriated or radiated from their Axis to their Surface. In ſome Parts of the Maſs to which theſe Columns adhere, are Edges of Cruſts, of the ſame Colour and Conſtitution with the Columns, but ſtriated acroſs, like thoſe of the Hæmatites. From the ſame Mines.

o. 27. Another of a reddiſh Colour: 'Tis in ſome Parts run into Columns, groſſer, but not ſo diſtinct, as in *o.* 22, & 23. The Surface is ſet all over with red Cryſtallizations, tending towards a rhomboid Figure, ſparkling and briskly reflecting the Light; and ſo placed, that their Edges ſtand generally to the Surface. From a Fiſſure of the ſame Mines.

o. 28. A piece of Iron-Ore of a black Colour externally, and its Surface very unequal, much reſembling a Cinder or Slag. Internally the Colour is a reddiſh brown. The Subſtance perforated with ſeveral parallel Pores; ſome of them empty, others fill'd with a reddiſh glittering talky Spar. From a Fiſſure of the ſame Mines. This is very rich.

o. 29. A Maſs of an irregular Figure. 'Tis black without; and where broken, appears to be of a ruſt-colour. From *Dudley* Iron-Mines in *Staffordſhire.* This is one of the Tali of a Nodule in form of the *Ludus Helmontij.* *Conf. o,* 105. *infra.*

o. 30. Another, very black, both within and without. Where 'tis broke, there adheres a thin Film of a white Matter, like that call'd by Mineraliſts, *Lac Lunæ.* Out of the ſame Mine with the former. *Conf. o.* 105. *infra.*

o. 31. Another, for the main of a ruſt-colour, with ſome Intermixture of black and yellowiſh. From the ſame Mine ſtill. *Conf. o.* 105. *infra.*

o, 32. Another, brown without, and of an aſh-colour within. From the Iron-Mines of *Woddesbury* in *Staffordſhire.*

o. 33. Another of a reddiſh brown without, and a ſomewhat more dusky brown within. From the Iron-Mines of *Walſal, Staffordſhire.* Where broken, it exhibits ſome whitiſh Films, like thoſe in *o.* 30.

o. 34. A flat piece of an Iron-Stone; its two oppoſite flat Surfaces black. Where broken, it ſhews an aſh-colour, with ſome yellowiſh Spots. From *Godnor* in *Derbyſhire.* This is the moſt common Iron-Ore, or rather Iron-Stone, of *England.* 'Tis of the middling Tenor, and yields about $\frac{1}{4}$ of Iron.

o. 35. Another of a dark-grey Colour, with a bluſh of red. From the ſame Mine.

o. 36. Another, of near the ſame Colour. There's in it a Vein of Coal of a very bright black; and another of a brown Spar. On one ſide is the Impreſſion of a Bivalve, and ſome Flakes of the Shell ſtill adhering to the Stone. From the ſame Mine.

o. 37. Another, of ſtill the ſame Colour, with Veins of a browniſh Spar. From the ſame Mine.

o. 38. Another, the Colour grey, yellowiſh, with a dusky brown. There are upon it Impreſſions of Bivalves of ſeveral ſorts, and of different ſizes. From -------- in *Suſſex.* Mr. *Harris.*

o. 39. Another piece of Iron-Stone, one ſide of a yellowiſh, the other of a reddiſh brown. On this ſide are Impreſſions of ſeveral ſmall Bivalves. From ------- in *Suſſex.* Mr. *Harris.*

o. 40. Another, of a very dark brown. There are ſeveral turbinated Shells in it: Some of them fill'd with this Stone, others with white Spar. The Shells are generally periſh'd and gone, and the Places of ſeveral of them fill'd with the ſame ſort of white Spar. From ------- in *Suſſex.* Mr. *Harris.*

o. 41. A ſmall Stone ſmooth without, and of a dark Liver Colour. 'Tis of the ſame Colour within, with the Addition of a faint Caſt of Purple. From *Workſworth* in the *Peak.* This is what the Miners in *Cornwall* call a *Shoad-Stone*; it being a Fragment, broke off an Iron Vein, by the Water of the Deluge departing; worn and ſmooth'd, by being hurry'd along by it; and finally left behind. *Conf.* 4. *o.* 100. *infra.*

o. 42. A Lump of Iron-Ore of a deep dusky red Colour. This is of that ſort which is call'd by Mineraliſts *Lapis Hæmatites.* Towards the Surface, 'tis cover'd with ſeveral Cruſts, the thickeſt about $\frac{1}{6}$ of an Inch, the thinneſt not above $\frac{1}{24}$: They lie cloſe to and are exactly fitted upon one another. They conſiſt intirely of tranſverſe Fibres. The Surface is ſmooth, ſhining, and riſing all over, in an elegant manner, into globular *Tubera* and Inequalities, not ill reſembling a Cluſter of Grapes. From the Iron-Mines of *Langron* near *Whitehaven, Cumberland.* *Conf.* Class 3. c. 263. The Factitious *Cinnabar* or *Cinnabar* of Antimony, much reſembles the *Hæmatites* in its fibrous Texture, and other ways. Now this Body is form'd in the Fire; and the *Hæmatites* ſeems to have been ſo too; tho' it be difficult to account for that. The *Hæmatites* Iron-Ore is found here, about *White-haven,* in great quantity. It yields about $\frac{12}{20}$ in Iron; and is, perhaps, as rich as any in the World. It comes at the firſt Fuſion into a Maſs that is immediately malleable, and will not run thin, ſo as to caſt and mould, unleſs mix'd with poorer Ore, or Cinders. 'Tis carried over, and work'd up, chiefly in ſeveral parts of *Ireland,* where Wood is more plentiful, than in *England.* Beſides, they carry it into *Cheſhire, Staffordſhire,* and *Pembrokeſhire,* and there melt it down with their poorer Ores; it promoting their Fuſion, and fetching the Iron of thoſe Ores more freely and fully out.

o. 43. Another, little different, only in the Body of it, now broken, appear ſmall Sparks of a glittering Spar. From the ſame Mines.

o. 44. Another, having only one Cruſt or Shell at the Surface, of about the thickneſs of a Line. The Globules in this, are ſmaller, the Surface more unequal, and the Body redder than either of the former. From the ſame Mines.

o. 45. Another, little different from *n.* 42. From the Iron-Mines of *Furneſs* in *Lancaſhire.* Mr. *Fitz-Roberts.*

o. 46. Another, conſiſting of ſeveral Cruſts; whereof the innermoſt is near half an Inch thick, black, ſhining, and polite, and without any tranſverſe *Striæ* or Filaments. From the Mines of *Langron, Cumberland.*

o. 47. Another, conſiſting of only one Shell, breaking into ſeveral unequal Planes, black, ſhining, and polite, without any *Striæ.* From the Mines of *Langhorn, Cumberland.* On the Inſide of this is a cubical Cavity of about $\frac{1}{8}$ of an Inch in Diameter, with ſeveral leſſer, as if there had been either cubic Spar, *Pyritæ,* or other like Bodies, lodged in it.

o. 48. Two Cruſts, one upon another, each about $\frac{1}{12}$ of an Inch in Thickneſs, and ſtriated a-croſs. From the ſame Mines.

o. 49. An *Hæmatites* little different from that *o.* 46. only in the inner part, appears a cubical Cavity half an Inch over, and 2 or 3 leſſer like Cavities. From the ſame Mines.

o. 50. Another, with like Cavities and Cruſts, only the interior thick Cruſt in this is ſtriated. From the ſame Mines.

o. 51. Another, little different from *o.* 42. only the tranſverſe *Striæ* are ſcarcely ſo ſtrong and conſpicuous. From the ſame Mines.

o. 52. Another, conſiſting of only one Cruſt, an Inch in thickneſs, ſtriated, black, and ſhining. The Surface of this is rough and porous. From the ſame Mines. This has a Caſt towards Purple.

o. 53. Another, little different from the preceding, ſaving that 'tis redder, and its Surface ſmoother. From the ſame Mines.

o. 54. Another, within of a gritty Stone-like Subſtance, of an iron-grey Colour, in ſome places cover'd with a red Cruſt ſtriated a-croſs, and riſing into ſmall globular *Tubera*. From the ſame Mines of *Langhorn, Cumberland*.

o. 55. Another, broad, and near flat, conſiſting of 5 Cruſts. The two exterior are red, and tranſverſely ſtriated: the reſt black and ſparkling much like a piece of Steel when freſh broken. The Cruſts being in ſome places a little diſtanc'd, there are in the Intervals ſeveral Sparks of a cryſtalliz'd Spar, moſt of it of a reddiſh Colour. From the ſame Mines. The Surface riſes into Puſtules very thick, but they are lower and flatter than in moſt of the foregoing. *Confer*. CLASS. 3. c. 265.

o. 56. Two Cruſts of an Hæmatites, each about $\frac{5}{12}$ an Inch thick. The outer, red, pretty ſmooth, and ſtriated a-croſs; the inner, black, ſhining and ſparkling like Steel, when firſt broken. On the inſide of this, are many ſmall, thin, black, ſhining Plates ſtanding irregularly, but generally edgewiſe, by each other. From ſtill the ſame Mines.

o. 57. Another, little different from the foregoing. From the ſame Mines.

o. 58. Another, ſeeming to conſiſt of many Fragments of Cruſts ſtriated a-croſs, and irregularly placed on one another. 'Tis of a dusky ruſt Colour, gloſſy, with a faint Caſt of Red. From the ſame Mines of *Langron, Cumberland*.

o. 59. Three Cruſts of an Hæmatites, adhering to each other, and croſs'd with fine ſmall *Striæ*. They are of a dark iron Colour, with a faint blue Caſt. On the Surface of the outermoſt, is a cryſtalliz'd Spar, ſemipellucid, and white, with a faint Tincture of red. From the ſame Mines.

o. 60. An Iron-Ore of a dark Colour, with a ſlight Caſt of red. There are adhering on the ſides of it, ſeveral ſparry Cryſtallizations hexagonal and pointed, where they had room to ſhoot. Some of them are diaphanous; others white; others of an iron red, very bright, ſhining, and polite; others not polite, but appearing as if powder'd over with an extreme fine Iron-duſt. From the ſame Mines. This, the precedent and following Samples were taken out of

Fiſſures

Fiſſures of the Stone adjacent to the Bellies or Receptacles of the Ore of theſe Bellies and the *Langron* Mines.

o. 61. Another, little different from the former. In this one of the Cryſtalline Shoots is very diſtinct, large and fair. 'Tis red, ſhining, and polite: only one ſide of it appears rougher, and as if ſprinkled over with a fine impalpable Iron-duſt. From the ſame Mines of *Langron*.

o. 62. A Body like a Red-Ochre, ſomewhat friable, and very thick ſet with very ſmall blackiſh Sparks, appearing like Steel-duſt. From the ſame Mines at *Langhorn*. I have a ſort of Native Cinnabar from *Hungary*, very like this; and the Artificial, or Cinnabar of Antimony, commonly much reſembles this, only in that the Sparks are commonly ſmaller.

o. 63. Another, not ſo red or friable: but thick ſet with like blackiſh ſhining Sparks. Amongſt them in ſome parts are Braſs-like ſhining Sparks; in others ſmall Spots of a lovely bright blue Colour. From the ſame Mines.

o. 64. A Tuberous Hæmatites. From *Langron*, in *Cumberland*.

o. 65. Another, from the ſame Mine.

o. 66, 67, 68, 69, 70, 71, 72, 73. Parts of Tuberous Hæmatitæ ſhewing ſeveral Varieties in the Cruſts, Striature, Texture, and Conſtitution of this Body. From the ſame Mine.

o. 74. Part of a very thick Cruſt of that ſort of Iron-Ore call'd Hæmatites. From the ſame Mine at *Langhorn*. 'Tis two Inches and $\frac{1}{4}$ in Diameter, and ſtriated a-croſs. The fibrous Grain of this comes up ſo nearly to that of the fibrous Talc + *d.* 1. and + *d.* 11 *, that I cannot but ſuſpect that the fibrous Structure of theſe Cruſts of the Hæmatites, and other like Bodies, is owing to an intermixture, of this ſort of Talc, with the Iron in theſe, and the various other Matter that conſtitutes thoſe other Bodies, in the Formation of them.

o. 75. A ſmall Body, appearing to be of the Hæmatites kind. Dug up about three Miles from *Penſance* in *Cornwall*. Dr. *Coamar*. He informs me that this ſort has been lately diſcovered there in conſiderable Quantity.

o. 76. A plated Hæmatites. From *Langron* in *Cumberland*. [Concerning theſe *Plates*, ſee the Account of that Mine, *p.* 24.]

o. 76*. Another, with ſmalll Tubera ariſing out of it. From the ſame Mine.

o. 77. Another, from the ſame Mine.

o. 78. Another, from ſtill the ſame Mine. This, betwixt the Cruſts of Hæmatites, has a parallel Cruſt of Spar.

o. 79. A Piece of Iron-Ore, with Effloreſcencies, of much the ſame Conſtitution with thoſe of the Hæmatites, riſing from it. There are alſo Sparks of Spar appearing in ſeveral Parts of it. From Mr. *Steel's* Mine, which is about two Miles diſtant from the great Mine, at *Langron*, in *Cumberland*. There is, in this, a Crack; which ſeems to have been a Shrink, or Contraction, in the Body ſince 'twas firſt form'd. Of theſe Shrinks, ſee the Account of the *Ludus Helmontij*, CLASS 4. *ſupra*.

o. 80. A Piece of Iron-Ore, black, with a Caſt of red, gloſſy, and ſhining. It ſomewhat approaches the Hæmatites. From *Furneſs* in *Lancaſhire*.

o. 81. A Maſs of Iron-Ore, extremely fine, with Efflorescencies and Tubera ſo rich that they very nearly approach the Conſtitution of Native Iron. Found in a perpendicular Fiſſure, in the middle of the *Skrees*, a vaſtly high Mountain in the Eſtate of the Duke of *Somerſet*, in *Waſdale*, in *Cumberland*. This ſort is very rare; but, in the Veins and Fiſſures of this Mountain, there is a conſiderable Quantity of good Iron-Ore, tho' it be not ſearch'd after, or work'd.

o. 82. Another Piece, very rich, in which Part of the Ore is ſhot into quadrilateral Pyramids, the Figure of the Tin-Grains, as if there was ſome of this Metal likewiſe in the Maſs. From the ſame Vein.

o. 83. A Piece of Iron-Ore, approaching the Hæmatites, very hard, cloſe, ponderous, and rich, of a flinty Conſtitution, and ſtriking Fire very freely. From the ſame Fiſſure, in the *Skrees*. Vid. *o*. 101. *infra*.

o. 84. A Piece of Iron-Ore, not quite ſo hard as the foregoing, but very rich; of a dusky red Colour; with an intermixture of a whitiſh gloſſy Spar. From ſtill the ſame Fiſſure, in the *Skrees* Mountain.

o. 85. A Piece of Iron-Ore, with Tubera, Shoots, and Effloreſcencies, very fine. Taken out of a perpendicular Fiſſure near the top of a very vaſtly High Mountain, about half a Mile from *Longthwaighte-Gill* in *Cumberland*. This Vein holds a great deal of very good Iron-Ore: but 'tis not known, or work'd. The Effloreſcencies in this Sample, are not to be compared with ſeveral that I obſerved, in ſome Parts of the Ore of the ſame Vein; but they were ſo tender and brittle that I could not eaſily preſerve them. They aroſe, like Vegetables, with a ſingle Stem; which parted afterwards into ſeveral Branches. I obſerved of all Sizes of them, to the Height of near two Inches. The Stems were round: and the Branches; only theſe, towards their Extremities, were jagg'd in ſuch ſort, that they there reſembled the common Heath. They were exactly of the Complexion of Iron, a dusky red, with a Caſt of blue.

o. 86. Another Sample, with Effloreſcencies not leſs obſervable. From the ſame Vein, or Fiſſure, in the *Skrees* Mountain.

o. 87. Another, very fine, and rich; from the ſame Vein.

o. 88. Another, from the ſame Vein.

o. 89. Another, from ſtill the ſame Vein.

o. 90. A Piece of Iron-Ore, extremely rich, and very hard, of a Steel Complexion; with an intermixture of Sparks of Spar. From a perpendicular Fiſſure in the *Skrees*, about a Mile diſtant from that mention'd *o*. 81. The Ore got lately at *Friſington*, near *Whitehaven*, is of much the ſame ſort: but poorer and more ſtoney.

o. 91. Iron-Ore, of a blackiſh Caſt, from *Newcaſtle* under Line, *Staffordſhire.*

o. 92. Another, not much different. *Suſſex.*

o. 93. Iron-Stone, of a dusky red Colour; with an intermixture of a gloſſy Spar, having in it ſeveral ſmall Bodies of that ſort that are commonly called Screw-ſtones. From - - - - - Mines, near *Winander-Meer*, in *Lancaſhire.*

o. 94. Iron-Ore, of a middle Nature betwixt the Clayey and Stoney ſort. From *Langron-Mine, Cumberland.*

o. 95. The ſoft, or Clayey Iron-Ore, from *Langron, Cumberland.*

o. 95*. More of the ſame, ſomewhat ſofter, and work'd up into a Ball of the bigneſs of an Hen's-Egg. They commonly make up this ſort into this Form: and ſell it for the *Smitting*, as they call it in the North, or Marking of Sheep: For which Reaſon alſo they call it *Smitt*. This is unctuous or oily: as are moſt of the Bodies in the *Langron-Mine*, whence this came. This is uſed by Painters: and makes a Red, little inferior to the *Indian* Red-Earth.

o. 96. Like Clayey Iron-Ore. Found in the *Skrees*, in the ſame Fiſſure with *o.* 81. This is the fineſt of the Clayey-Ore: and, thus made up into Balls, they uſe this alſo for marking of Sheep, and call it *Smitt*. The Miners call it *the Mother of the Mine.*

o. 97. A Maſs of a deep grey Colour, bright, ſparkling and very much like Steel, where broken, only the Grain is ſomewhat larger. I have not try'd it: but it ſeems to hold Iron. From *Temple, Cornwall.* 'Twas part of a Load, three Foot over, and running North-Weſt and South-Eaſt.

o. 98. A black gloſſy Iron-Ore, having in it a little Spar, white, with a Caſt of red. From Mulberry-Works, in *Lanevet, Cornwall.*

o. 99. Iron-Ore, in ſome Parts brown with a Caſt of red: in others of a dusky Complexion, near black. There are alſo in it Parts of a Braſs-like ſhining Marcaſite: and 'tis very probable there is Copper in the Maſs. The Miners call this ſort *Cockle*. From - - - - - in *Cornwall.*

o. 100. A Maſs ſomewhat larger, and of a Grain more ſmooth and fine, otherwiſe of much the ſame Colour and Compoſition with that *o.* 41. *ſupra.* Found among Pebles, near *Penrith, Cumberland.* Lord Biſhop of *Carliſle.* This appears plainly to be a Shoad-ſtone, born from ſome very rich Iron-Vein.

o. 101. A Piece of Iron-Ore, of a dark Liver Colour. It breaks like a Flint; and its Conſtitution is near as compact and fine. On one ſide, in a ſmall Cavity, is a bright ſparkling Spar. *Newent, Glouceſterſhire.* It ſtrikes Fire, as that *o.* 83. *ſupra*, does.

o. 102. Part of a Nodule, flat, and almoſt ſquare. 'Tis near an Inch in Thickneſs: four Inches over one way, and above three another, where it has been broke. In the middle is a Matter pretty hard: grey, with a Caſt of yellow. This is inveſted with a Cruſt of a deep red Colour: and, without all, is a Cruſt of a Colour more duſky and near black. Betwixt the two Cruſts is a fine yellow Ochre. This Body is nearly ally'd to the Iron Ores. *o.* 5. 6. and 7. *ſupra.* and indeed both thoſe and this to the Geodes, and mineral Bezoars. Found among Marl, near *Hunton*, in *Kent*, in the Pit mention'd by Dr. *Halley*, Philoſophical Tranſactions, N° 155. p. 463. Theſe Bodies are found in that Pit but ſparingly: but are got 10 or 12 Miles off, at - - - - - in greater plenty; where they are ſmelted, caſt into Guns, wrought into Bars, *&c.*

o. 103. Iron-Stone, the Colour dark grey, near black: of a Conſtitution much like that *o.* 3. *ſupra.* From - - - - in *Staffordſhire.*

o. 104. Part of a very large Maſs of the ſtoney Iron-Ore, from *Weddesbury* in *Staffordſhire.* There are large Maſſes raiſed of it. 'Tis very hard: and of a dark grey Colour. There are in ſome Parts of it Cylindric Cavities: and ſome of them have Pipes in them, in ſhape not unlike thoſe of the piped waxen Vein; but they are generally of a blackiſh ferruginous Conſtitution. Not but that, in ſome Parts of the Stone, I have obſerv'd, in breaking of it, Spar very like the ſparry Matter of the piped waxen Vein: and in others a coarſer Spar, with a white light farinaceous Matter, exactly like the *Lac Lunæ.* I alſo obſerved, in ſome few Parts, Plates of a white Spar, not unlike thoſe in ſome of the leſs perfect *Ludus Helmontij.*

o. 105. The finer Iron-Ore, from *Weddesbury.* This was part of a Nodule, of the bigneſs of a Man's Head. 'Twas apparently of the Texture and Compoſure of the *Ludus Helmontij*; conſiſting of ſeveral Tali, parted generally from one another by Intervention of that fine white duſty Matter, commonly call'd *Lac Lunæ*: but ſometimes by thin Plates of a whitiſh Spar, very friable, and reducible to a Pouder, like that of *Lac Lunæ.* And indeed this ſeems to be no other than that very Mineral incorporated with a very ſmall Proportion of Cryſtal. Perhaps, one ſort of the coarſer white Spar is made of that very Compoſition: I mean, of the Farina of *Lac Lunæ* incorporated with cryſtalline Matter. And as the one or other is ſuperior in quantity, the Body is more or leſs diaphanous. There are other kinds of Matter that are frequently found intermix'd with Spar: but I take the *Lac Lunæ* to be the moſt common of any in the white Cruſted Spar of *Glouceſterſhire.* This is certain, that *Lac Lunæ* is very frequently found in the Fiſſures of the Stone, in great plenty in the Quarries about *Sherborn* in *Glouceſterſhire*, looſe in the perpendicular Fiſſures, along with the Spar: And indeed, in many of the Quarries of that, of *Northamptonſhire*, and the neighbouring Counties, as well as elſewhere in many other Parts, in the Quarries, and Mines *. This Specimen of Ore is part of the out-ſide of the Lump, which was a Nodule, and lay looſe in the Bed. 'Twas of a ſhattery Conſtitution: and very eaſily broke to pieces. There is one of the Tali along with it.

o. 106. Part of another Core or Talus, out of the Nodule before-mention'd. Theſe are hard and pretty rich of Iron. They do not ſplit with a Grain: but break irregularly and uncertainly, like Flints.

APPENDIX *to* CLASS XI. PART IV.

Mineral Bodies that contain in them more or leſs of Iron.

SECT. I. *Magnes, the Load-ſtone.*

PREFACE.

A Load-ſtone that weigh'd but 11 *Grains would take up a Piece of Iron of an Ounce in weight.* Sir *J. Pettus's* Dictionary *to* L. Erckern, *in Load-ſtone.*

SECT. I. *Load-ſtone.*

† *o.* 1. A piece of Load-ſtone, of a dusky blackiſh Colour, with a Caſt of an Iron-Colour, and ſeveral black gloſſy Sparks. There is incorporated with it a white Spar. Its Magnetick Power is very little. From - - - - in *Devonſhire.* Mr. *Robert Ball.*

† *o.* 2. A piece of Load-ſtone, black, ſhining, and ponderous: with a Vein of Granates in it. From - - - in *Devonſhire.* Mr. *John Walter.*

SECT. II. *Magneſia, Manganeſe.*

·x· *o.* 1. Manganeſe, without of a reddiſh ruſt-colour, within more black. 'Tis porous, and not very heavy. From the *Charter-houſe Liberties, Mendip.*

·x· *o.* 2. Manganeſe, of a dusky grey Colour, near black: and of a Conſtitution more firm, cloſe, and hard, than the former. From - - - - upon *Mendip, Somerſetſhire.*

SECT. III. *The Cruſtated ferruginous Bodies: Bezoar Minerale, Geodes, Enhydros.*

PREFACE.

Theſe Bodies have generally Iron in them, more or leſs; for which reaſon it is that they are ranked in this Place. Indeed, ſome of them hold ſo much Iron, that they are work'd and ſmelted for it. Confer. *o:* 1, 5, 6, 7, 102. *ſupra.*

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* *See ſome Specimens of Lac Lunæ in Spar, in* my Engliſh Collection, *f.* 39. *to f.* 46.

For the better diſtinguiſhing theſe Bodies, it may not be amiſs to give the diſcriminative Characters of each, out of my methodical Diſtribution of Foſſils into Claſſes, *publiſhed at the end of my Anſwer to Dr.* Camerarius, pag. 4, 5. Claſs 2. Cap. 2. Memb. 1. Artic. 2. Sect. 5. " *Stones conſiſting commonly of ſeveral Cruſts one within " another.* 1. *Having the Cruſts cloſe, cohering, and no Cavity " within,* BEZOAR MINERALE : *or,* 2. *Having in them a Cavity, " with Matter in it, looſe, and moveable; either, firſt, ſolid, and " ſtoney, call'd a Callimus,* ÆTITES : *or, ſecondly, looſe, as Sand, " Ochre, Chalk, Earth,* GEODES : *or,* 3. *liquid,* ENHYDROS."

The flinty Ætitæ *are ſet forth in* Claſs III. *in which the ſeveral Varieties of Flints are exhibited. The* Ochreo-ferreous Ætitæ *are of the Conſtitution of the Bodies treated of here: and, as I have obſerv'd ſeveral of this latter ſort, I kept ſome; but know not by what Accident they have been ſince loſt: ſo that there are none entered here.*

As for the other Bodies ſet forth here, they are not placed in good order. But I muſt not now pretend to vary the Method, or the Numbers, becauſe they are referr'd to, under the Numbers they ſtand here, in ſome of my other Papers.

The Cruſtated ferruginous Bodies.

+ *o.* 1. Enhydros. A Body of a flattiſh Form, and about the bigneſs of a Man's Fiſt. 'Tis broke, and by that means two Cavities diſcovered within it. The bigger of them is of about the Capacity of the Shell of a Turkey-Egg: the leſſer, of about that of a Pigeon. It is conſtituted mainly of 3 Cruſts, within one another; which eaſily flake and ſubdivide into other thinner ones. The innermoſt is not above $\frac{1}{20}$ of an Inch in thickneſs: the middlemoſt about $\frac{1}{6}$: and the exterior about $\frac{1}{8}$. 'Tis, for the main, of a yellowiſh brown Colour: but in ſome Places of a darker and ferruginous Hue. This I took forth of a Stratum of Clay, in which was a great deal of fine Sand, 15 Foot deep, in *Caen-Wood*, betwixt *Hamſtead* and *High-gate*. It had a Liquor in the Cavities of it: and is one of thoſe Bodies the Antients called Ενυδροι.

+ *o.* 2. A Piece of another, little different, parted into ſeveral Cells. The Surfaces of the Cruſts of this riſe into Scales, and Flakes. Found with the former.

The two precedent Enhydri were found, amongſt many others, in ſinking the Wells in *Caen-Wood*; whence that Water which we call the *Hamſtead* Water is derived, and conveyed firſt into great Ponds at the bottom of the Hills, in which thoſe Wells are ſunk, and from thence by Pipes to *London*. I was down only in one of the Wells, which they were then in digging: but I ſaw ſeveral of theſe Enhydri, with a pretty many Pyritæ, amongſt the Earth that was flung forth of the other Wells. They are of ſeveral Sizes, from the bigneſs of a Walnut, to about 2 Foot in breadth. They are generally of a compreſs'd Shape:

and leſſen or grow thinner towards the Edge or Ambitus of them. Thoſe that I ſaw, lay about 15 or 16 Foot deep, in a Stratum of ſandy Clay: The Surfaces of that Stratum, and the Flats or larger Plains of the Enhydri lay parallel, and level. They were all hollow, and uſually divided into ſeveral Cells, but theſe were uncertain, both as to their Number, Figure, and Capacity. The Partitions of the Cells were rarely very thick. The outer Coat was in ſome double, in others triple, and in a few quadruple; as conſiſting of 2, 3, or 4 ſtoney Cruſts, involving and carrying one another. They were, for the main, of the ſame Conſtitution with thoſe of the two deſcribed above. The Cavities or Cells were generally near full of an inſipid Coagulum, or Liquor, about the Conſiſtence of Cream, though in here and there one 'twas a little thicker. 'Twas moſt commonly of a greyiſh Colour: but in ſome few 'twas of a blueiſh, and in others of a blackiſh Hue.

+ *o*. 3. Another Enhydros, of an oval Shape, and near as big as a Man's Fiſt. 'Tis broken in two, and the Sides or Parietes of it are about half an Inch thick. In the middle of it is an oval Cavity, lin'd all over in an elegant manner, with a reticulated Work, the Maſhes all of near the ſame Size, and capable of admitting a Body ſomewhat bigger than a Rape-Seed. Both the Reticulum, and outer Surface, are of a yellow Ochre Colour; but the inner Subſtance is of a darker, or ferruginous. This was found ſomewhere on *Mendip* in *Somerſetſhire*: but whether in the *Calamin-Mines*, or where elſe, I cannot recollect.

+ *o*. 4. Bezoar-mineral, a ſmall Stone of a ruſt Colour, with an Admixture of Ochre. It conſiſts of ſeveral Coats or Cruſts incloſed one in another: and is what is commonly called the Bezoar-mineral, found on the Shore of the Sea near *Outhorn* in *Yorkſhire*. It appears to have been toſs'd to and again by the Motion of the Sea upon the Shores, which has ground away part of ſeveral of the outer Coats, and uncovered the inner ones.

+ *o*. 5. A Geodes, conſiſting of two or three Coats. 'Tis hollow, and had the Cavity filled with a ruſt colour'd Ochreous Powder. The Coats, where broken, appear of a dark ferruginous Colour. The Surface is very ſcabrous, and chop'd like the Bark of an old Tree; both that, and the inner Surface, being of a yellow Colour. 'Twas found in a Stratum of Gravel, in the great Gravel-Pit, on the Eaſt-ſide of *Hyde-Park*, without the Pale, where theſe Bodies are pretty commonly met with.

+ *o*. 6. Another Geodes, very ſcabrous, and hollow, made up of ſeveral very thin Coats of a ferruginous Colour, with an Intermixture of Ochre. From the ſame Gravel-Pit. The Cavity was filled with a looſe brown Ochreous Matter.

+ *o*. 7. Another Geodes, likewiſe having an hollow, in the middle, filled with a looſe yellowiſh Ochreous Matter. It conſiſts of three Cruſts, the middlemoſt much thicker than either of the other, being $\frac{1}{5}$ of an Inch acroſs. 'Tis within, where broken, of

a

a ruſt Colour: the outer Surface yellow, and prettily cover'd over with a ſort of Net-work. Found in a Gravel-Pit near *Newington-Green.*

+ *o.* 9. A whitiſh Body, with a Caſt of yellow, friable, but rather harder than Chalk, incloſed in an hard, dusky, ferruginous Cruſt, about $\frac{1}{10}$ of an Inch in thickneſs. Found in a Gravel-Pit on the North-ſide of *Oxendon,* near the Church. Mr. *Morton.* This is a ſort of Geodes.

+ *o.* 10. A Stone of a ferruginous Colour. Being broke one part, it appears to be a Cruſt, incloſing a gritty Stone of a dark Ochre Colour. Both the one, and the other, ſhew ſome very ſmall Sparks of a ſhining Talky Matter. This Body is very ponderous: and ſeems to contain more Iron than any of the foregoing. Found on the Sea-ſhores near *Burlington, Yorkſhire.* This is referable, if to any of theſe, to the Bezoar-mineral. But this Body is not ordinarily ſo ſtoney and hard.

+ *o.* 11. A Geodes, of a ferruginous Colour, with ſeveral Cavities, having in each an Ochreous Duſt. 'Tis broke, and in two of the Caverns are ſeveral ſmall Cylinders, paſſing moſt of them acroſs from ſide to ſide. There's one larger than the reſt, being $\frac{1}{4}$ of an Inch diameter. Found in a Stone-pit at the Weſt-end of *Desborow, Northamptonſhire.* Mr. *Morton.*

+ *o.* 12. A Geodes, of the Bigneſs and Figure of a Pullet's Egg, only it is ſomewhat compreſs'd. 'Tis outwardly of a grey Colour. Being ſplit in two, there appears in the middle an oval Nucleus, of the bigneſs of a Cheſtnut, of a light brown Colour, friable, and not unlike an Ochre. This is inveloped with a ferruginous Caſe, about one tenth of an Inch thick: and that with another, paler, and about three times as thick. Found near *Wiggan* in *Lancaſhire.*

+ *o.* 13. A Geodes of an oblong Figure: and ſquare, only a little flat. Outwardly it is of a dark brown ferruginous Complexion; and hard. In the middle is a Nucleus, grey, with a Caſt of yellow; and ſofter. Sir *George Wheeler.* This is about two Inches in length. Found in a Gravel-pit near *Durham,* in which this ſort is pretty frequent.

+ *o.* 14. Another of an irregular and compreſs'd Figure; otherwiſe little different from the foregoing. Sir *George Wheeler.* From the ſame Pit.

+ *o.* 15. Another, of an oval Figure, but flat or compreſs'd: and its out-ſide of a dark ferruginous Colour. It is compoſed of five or ſix thin Cruſts; and betwixt each is a very thin Plate of an Ochreous Matter, which on one ſide of the Body is of a red, on the other of a yellow Colour. Within all, in the middle of the Body, is a yellowiſh Ochreous Matter, more ſoft and friable than in any of the foregoing. From ſtill the ſame Pit. Sir *George Wheeler.* Indeed, the central Ochreous Matter hardens as it dries: and was much ſofter when firſt taken out of the Earth.

† *o*. 16. Another, broke: ſcarcely different in any thing from that † *o*. 13. Found upon the Shores of the River *Tyne*, near *Newcaſtle*.

† *o*. 17. Another Geodes, of an oblong Shape, about an Inch in length. It is compoſed of only one ſingle Cruſt, about $\frac{1}{10}$ of an Inch in thickneſs. This is of a very dusky red Colour: only the outſide is of a brighter red. It is fill'd within with an Ochreous Duſt, of a light brown Colour. Found in the great Iron-Mine at *Langron, Cumberland*.

† *o*. 18. Another, of the bigneſs of a Walnut, of a very pale brown Colour, broken to ſhew the interior Conſtitution of it. 'Tis compoſed of one ſingle Cruſt, having a duſty Matter within, of a darker Colour than that of the Cruſt. Out of a Brick-Clay-pit near *Tatnam Court*. They are very common in the Clay-pits all about this City; but the Brick-makers pick them out of the Clay; becauſe, when they come to be heated in the Kiln, the Air, in the Cavity within, becoming rarefy'd, and expanding, breaks the Shell, and burſts and ſpoils any Brick that it may happen to be incloſed in. They call it *Race* or *Rance*.

† *o*. 19. A Bezoar-mineral, of a Conſtitution harder than uſual. 'Tis of a flattiſh Figure: and compoſed of ſeveral Cruſts, each about $\frac{1}{8}$ of an Inch in thickneſs. The outermoſt is of a red Colour: the next of a yellow: and ſo on alternately red and yellow to the Umbilicus of the Body. *Harwich-Cliff.*

† *o*. 20. Part of a Bezoar-mineral, of a triangular Form, compoſed of Cruſts alternately brown and white. Found in a Tile-Clay-pit, along with the *Ludus Helmontij*, x. *d*. 25. on the top of *Shooters-Hill, Kent*.

† *o*. 21. Part of a Geodes, that was, when entire, about the bigneſs of a Man's Fiſt. 'Tis externally covered over with a ferruginous Cruſt, about $\frac{1}{4}$ of an Inch thick. This was fill'd chiefly with a groſs Sand, amongſt which was a yellow Ochreous Matter. Out of a Gravel-pit on *Hamſtead-Heath*, where there were ſeveral of the ſame ſort.

† *o*. 22. A Nodule of Race, of the ſame ſort with that † *o*. 18. From a Brick-Clay-pit in the Fields, on the Weſt-ſide of *Hyde-Park*.

† *o*. 23. Another, oblong, and carrying the Appearance of a white Coral. From the ſame Clay-pit. Indeed, theſe Bodies are all tuberous, and unequal: and ſome have ſhort Stems, branch'd, and not unlike Coral. I examin'd a great Heap of them that were pick'd out of the Clay by the Workmen: They were of ſeveral Sizes, from the bigneſs of a Pea, to that of a Hen's Egg. When the Clay is waſh'd off, they are all of near the ſame Colour, which is a light Aſh-Colour. Breaking ſeveral of them, I generally found a kind of clayey Matter in them, ſometimes of a brisk, and ſometimes of a dusky red Colour. After they have been long expoſed, and thoroughly dry'd, this Clay comes into Form of a Duſt or Powder, as 'twas in † *o*. 18. *ſupra*. Some few

there were amongſt thoſe I broke, that, like this, had no Cavity, or clayey Matter in them.

+ *o*. 24. Another, from a Brick-Clay-pit in a Field, on the North-ſide of *Soho-Square*.

MANTISSA I.

Natural Delineations, of Shrubs, upon the Surfaces of various Foſſils, chiefly in black, but ſometimes in brown, made by Mineral Steams.

DENDRITÆ *s.*

Inſcriptæ Foſſilibus Arbuſtorum Delineationes, ab Halituum Mineralium Aſcenſu factæ.

p. 1. A Piece of grey Slate, with a greeniſh Caſt. On the middle of it ſtand Delineations of Shrubs, in a Row, done in black. Above and below are leſſer Delineations, of the ſame Colour, reſembling Moſs; all finely exhibited. Mr. *Fitz-Roberts*. From the great Slate-Quarries near *Newlands, Cumberland*.

p. 2. A Piece of pale brown Stone, with a Row of Shrubs on it, in black, and upon a black Ground. *King's Weſton*.

p. 2 *. Delineations of Moſs, or Shrubs, black, on a whitiſh Stone: got in a vaſt Quarry in *Sella-Park, Cumberland*. All the Stone of this Quarry exhibits theſe Delineations wherever it parts in breaking.

p. 3. A grey Flinty Peble, with various Delineations on the Inſide of it. Found by the Road in a Gravel-pit beyond *Deptford*, on the Brow of the Hill entring on *Black-Heath*.

p. 4. Another, with like Delineations. *Shooters-Hill*.

p. 5. Another. *Clapham-Common, Surrey*.

p. 6. Another, white, with 3 or 4 Shrubs, of a deep brown, on the Surface of it. *Greenwich-Park, Kent*.

p. 7. The Shell of a Bivalve, ſtruck out of a grey Stone, with Delineations of Shrubs very fair upon it. *Stifford, Eſſex*.

p. 8. Another, with like Delineations; from the ſame Place.

p. 9. A Piece of Stone, with part of the Spike of an Echinus Marinus, and ſeveral Fragments of Sea-ſhells incloſ'd in it, with like Delineations upon them. From a Quarry near Sir *Ralph Dutton*'s Houſe. *Sherborn, Glouceſterſhire*. The Delineations, when brought forth to the Air, in Tract of Time fade, and decay.

p. 10. & 11. Two others, from the ſame Quarry, with like Fragments of Shells and Delineations upon them.

p. 12. & 13. Two pieces, of a very hard grey Flint, that were originally one, joining with a kind of natural Seam, at which they divided and parted. The Surfaces that were contiguous, have ſeveral very fair and large Delineations of Shrubs upon them. Thoſe on the Surface of the one Piece are of the ſame Form, and Bigneſs, and ſtand at the ſame Diſtance, that thoſe do on the Surface of the other. Found by *Guilford* in *Surrey*, whence they were ſent to *Rome*, and preſented to *S. Ag. Scilla*, who ſent them back to me.

MANTISSA II.

Scoriæ, Slags, and Vitrifications of Metals.

q. 1. A glaſſy Body, with Veins, or rather Cruſts, of green ſtraw-colour, and pellucid, included one in another, exactly in manner of ſome Agats.

q. 2. Another, of a very deep green approaching black.

q. 3. Another, black. From the Lead-ſmelting-Works, near *Workſworth* in the *Peak*.

q. 4. Another, black. From the Lead-Works at *Chuton*, on *Mendip*, *Somerſetſhire*.

q. 5. Another, likewiſe black. From the Tin-works at - - - - in *Cornwall*.

q. 6. A piece of coarſe brown Slag, ſeeming to be of Copper. There are great Heaps of this found on a Tenement call'd *Stone*, lying two Miles South-Eaſt of *Chumleigh*, *Devonſhire*, near the Ruins of a Building; which, according to the Tradition there, was a Palace of a *Saxon* King. There's now no Mine or Forge near. I am not poſitive, that this, and the two following, are certainly Slags. Though they have much the Aſpect of Slags, they may poſſibly have been natural Nodules; which I the rather note, becauſe there are no Forges near any of the Places where theſe three are found.

q. 7. Another, of a dusky Colour, near black. There are of theſe frequently plowed up in the Fields of *Weldon*, *Northamptonſhire*. Mr. *Morton*.

q. 8. Another, little different. Found amongſt others very plentifully in plowing in the Fields near *Dean*, *Northamptonſhire*. Mr. *Morton*.

q. 9. A ſlaggy Scoria taken off the Surface of the Lead, ſmelted out of *Caudbeck-Ore*, *Cumberland*. I never ſaw the like in other Lead-Works: but 'tis conſtant here. Obſerving it to be very ponderous, I ſuſpected there was Metal in it: and making trial, I got a conſiderable Proportion of Lead out of a Piece of this ſort.

q. 10. A Slag, taken out of the bottom of the Hearth of the Lead-ſmelting-Works at *Newlands*, *Cumberland*. They uſe there the Copper-Slags, that remain of the Hochſtetters-Works, as a Flux to promote the Fuſion of their Lead-Ore.

q. 11. A Copper-Slag, from the Remains of the Hochſtetters-Works, near *Keſwick*, *Cumberland*.

q. 12. Melted-Iron, from the Works at *Cleter* near *Langron* in *Cumberland*. The Undertakers pretended they run it with Sea-Coal; but, upon breaking this Piece, and ſome others, in which I found Pieces of Charcoal, I diſcover'd their Deceit.

§. 13. A *Regulus*, run out of black Lead, of the fineſt ſort, powder'd, without any Flux.

MANTISSA III.

Miſcellany Inſtances of metallic and mineral Bodies that have been wrought; and that give ſome light to natural Hiſtory.

EXTRACT.

1. No Growth of Metals in Ore expoſed to the Air.
Nor in Ore long ſince caſt aſide in the Mines under Ground.
Nor in the Slags remaining of ancient Works.
2. Of Dr. *Meara*'s miſtaking Quicklime for a native Mineral, and imagining it to be the Cauſe of the Heat of the Baths of *Bath*.
3. Blue Vitriol found adhering to the bottom of a Furnace that had ſerv'd for calcining Copper Marcaſites.
4. A Cryſtallization of Allum.
5. Litharge.
6. Pitch out of the *Shropſhire* Pitch-ſtone.
7. An Oil out of that Pitch reſembling *Petroleum*.

MANTISSA III.

Miſcellanea, Hiſtoriam Metallorum & Mineralium quorundam, arte elaboratorum, ſpectantia.

§. 1. Three Maſſes of the dreſs'd Copper-Ore that was left in the Field unſmelted, by the *Germans*, *Hochſtetters*, when they deſiſted and quitted the Works of *Goldſcalp*, about the Year 1630. There are ſeveral Heaps of theſe; and ſome very large. The Ore was broken and reduced ſmall; but having lain expoſed to the Air and Rain, the Salts in the Marcaſites liquating, clotted and united the broken Ore in this manner into one Maſs. Theſe were Parts broke off the outſides of the Heaps; the interior Parts are harder and more firmly combined; they are likewiſe richer, and have more Copper in them; the Salts having diſſolv'd a great deal of the Metal; which, partly by reaſon of its Gravity, and partly becauſe of the ſmallneſs of its Parts, made its Way along with the Water that fell in Rain, to a greater depth in the Heap. Such a Removal of the Metal out of one part of the Maſs, and collecting of it in another, is what has miſ-led ſome Writers, and given umbrage to an Opinion, that there is a growth of Metal in Ore expoſed to the Air. But tho' this Ore happens thus to clott and combine, ſome ſorts there are, both of Copper, Lead, and Tin, that lie in Clay, Shiver, and lax Spar, that the Weather looſens, and opens the parts of, after they have been long expoſed to it. So that in theſe, the Ore that before could not be parted in waſhing, is, by this Means, in tract of Time, brought to ſuch State as to render it ſeparable; and is frequently after ſome time waſh'd and ſmelted to Profit. Another Accident there is, that has given as much ground to this Error, of the Production and Encreaſe of Metals, while expoſed to the Air, as either of the former. This is, thoſe who wrought the Veins anciently, when they were numerous, full, and the Ore rich, neglected and caſt aſide the poorer Ore. And this being work'd at this day to conſiderable advantage, has made ſome imagine, the Ore has grown ſince 'twas ſo caſt aſide. Nay, there have been thoſe who have fancied a growth of Metal, even in the Slags that are Remains of the ancient Works; becauſe we now run them again to Profit. But, ſuch was the unskilfulneſs and careleſſneſs of the Smelters of thoſe Times, they frequently left a conſiderable ſhare of Metal behind in their Slags. They ſeem to have made their Fires not ſufficiently ſtrong and intenſe; ſo that few of their Slags are found vitrify'd. And the laxer Slags yield to the Weather, moulder, and fall to pieces; after which, the Metal may be ſeparated from the Refuſe, by waſhing, and ſo melted down.

r. 2. Lime, very white, that I collected on *Lanſdown* near *Bath*. 'Twas ſcatter'd out of the Carriages that convey'd it to the neighbouring plough'd Lands for their Manure. I ſearch'd thereabouts very carefully, but could find nothing elſe of like ſort: So that there cannot well be any doubt but that this was what Dr. *Meara* call'd *a kind of Chalk as white as Snow, which* being taſted, was attended with a *biting and heat in the Mouth,* and *being put into cold Water, rais'd an Ebullition and Heat like Quick-Lime.* So that he took it to be the cauſe of the *Heat of the Water of the Baths*; and thought this a *noble Diſcovery* *. This is certain, Lime is, and has been long uſed for Manure of the Fields thereabouts; and 'tis frequently found dropt out of the Carriages all about *Lanſdown,* the very place where his *white Chalk* was found †: And his Deſcription ſquares ſo exactly to Lime, that 'tis ſtrange he ſhould not know this Body was apparently nothing elſe. It ſeems, that which he ſaw, happened to be freſh, and gather'd before any Rain had fallen to ſlake it. 'Tis not well, that Gentlemen that have not duly inform'd themſelves of Things the moſt obvious and common, ſhould take upon them to write of thoſe that are the moſt abſtruſe and difficult. This is what has laid the foundation of Amuſements in Natural Hiſtory, and Errors without end. And they, who would hereafter write well and juſtly, muſt be very cautious how far they rely upon a vaſt number of both Obſervations and Reaſonings, that ſome of late have ſet forth to light.

r. 3. Vitriol blue, found adhering to the bottom of a calcining Furnace of the braſſy ſhining Copper-Ore in *Newlands, Cumberland.* 'Tis known, that this ſort of Ore has Vitriol in it. The Furnace had been diſuſed for ſome Months; and probably, the Humidity of the Air, during that Receſs, collecting there and forming Drops, as uſual, theſe falling brought down the Salts that had been before carry'd up by the Fire to the top of the Furnace, affix'd and cryſtalliz'd them there. There was about a Pound of this Vitriol; and all of it finely ſhot and cryſtalliz'd: but this has been broke and injured by Carriage. The blue Tincture was owing to Copper concreting with the Vitriol.

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* *See his Letter in Dr.* Childrey's Brit. Bac. *p*. 40.

† Ibid. *p*. 39.

r. 4. A quadrangular Shoot of Allum terminating in a Point, found with ſeveral other like Shoots adhering to a ſide of the Veſſel, in which the aluminous Liquor was ſet to cool after boiling, at a Crack, thorough which a ſmall quantity of the Liquor leak'd forth. *Peak*, near *Hackneſs*, *Yorkſhire*.

r. 5. Litharge.

r. 6. Pitch from *Bental* in *Shropſhire*, drawn forth of the *Lapis Piceus* there. *Conf. g.* 1. *ſupra*.

r. 7. An Oil drawn forth of the Pitch above-mentioned. *r.* 6. They there fancy it like Oil of Amber; but in that they are much miſtaken. Indeed, it does very much reſemble the common black *Petroleum*, in Conſiſtence, Colour, Smell, and all other Reſpects: and without doubt, the true native *Petroleum*, found floating upon the Water of ſome Springs, is no other than this very pitchy Subſtance, drawn forth of the Strata, by the Water, as it paſſes them in its Courſe to thoſe Springs. Probably, the ſubterranean Heat may alſo contribute ſomething to the liquating and running of it.

A
CATALOGUE
OF THE
ENGLISH FOSSILS
In the COLLECTION of
J. WOODWARD M. D.

PART II.

Exhibiting the FOSSILS that are extraneous; the Parts of Vegetables, and of Animals, digg'd up out of the Bowels of the Earth; in particular the Shells of Sea-Fiſhes: as alſo the Stoney, Mineral, and Metallick Bodies form'd in them.

Ranged and diſpoſed in a Claſſical Method, according to their ſeveral Kinds and Alliances; with an Hiſtorical Account of each: as likewiſe various Obſervations, and Reflections.

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The Subjects treated of in this Catalogue, the marine, and other extraneous Bodies, turn'd out of the Earth, *p.* 2.

The Method in which they are ranged, *ibid.*

The Places where they were found, *ibid.*

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Remarks upon the Bodies in this Catalogue, *p.* 3.

Some of the Uſes of this Collection; *e.gr.* to ſhew that the foſſil Shells, *&c.* are really marine, *ibid.*

That when thoſe Shells were thus repoſited in the Stone, *&c.* all was in a State of Solution; hence the Impreſſions of Shells in Stone, and in other ſolid native Foſſils, *ibid.*

That there has been a total Diſſolution of the Earth, *ibid.*

That the whole Globe was diſſolv'd all at the ſame time, *ibid.*

That the *Conchitæ*, and other ſtoney Bodies, reſembling Shells, were moulded in the Cavities of Shells, *ibid.*

That there happen'd certain Tranſlocations at the Deluge; the Matter, conſtituting animal and vegetable Subſtances, being diſſolv'd, and mineral Matter ſubſtituted in its place; and there being like Tranſlocation of Metals in ſome Springs, *p.* 4.

And in chymical Operations, *ibid.*

That ſome of the Shells, which were lodg'd in Stone, are ſince diſſolv'd, convey'd away, and the Spaces, they poſſeſſed, left vacant, *ibid.*

That theſe Spaces are frequently now found fill'd again with ſparry, mineral, and metallick Matter; which therefore carries the Form of the Shells departed and gone, *p.* 5.

That this miſ-led ſome into the Error that theſe Bodies are of mineral Nature, Stones, and not really Shells, *ibid.*

The Bodies themſelves ſerve to detect Errors concerning them, and to eſtabliſh the Truth, *p.* 6.

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—— —— —— —— ——§.§.1. *Cunei ſuperficie ſulcata à Card. ad Marginem.*

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—— —— ——*Artic.* 1. *Figura longa, anguſta, ejuſdem ubique Latitudinis; ſeu* Solenes.

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Claſſis 4. *Multivalvia, p.*63.

—— ——*Sect.* 1. *Ex tribus Teſtis conſtantia.*

—— —— ——*Artic.* 1. *Figura ad Chamas accedente, cum Teſta tertia parva, Valvis juxta Cardinem oppoſita: ſeu* Pholades.

[The Diſtribution of the *Echini* is ſomewhat varied and corrected in the Catalogue of the Exotick Foſſils.]

Claſſis 5. Echini, *p.*64.

——*Pars* 1. *Duobus in Teſta Foraminibus, Tuberculis exiguis & fere æqualibus in ſuperficie donati; ſeu* Spatagi.

—— ——*Sect.* 1. *Spatagi qui in uno Latere Sulcum inſignem habent:* Cordati *aliquibus dicti.*

—— —— ——*Artic.* 1. *Foraminibus verſus Latera poſitis, uno ſub Fiſſura, altero in Latere oppoſito.*

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—— ——*Sect.* 2. *Spatagi nullo Sulco ad Latera donati, utriſque Foraminibus in Baſi Teſtæ, p.* 68.

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P R E-

PREFACE to the Whole.

The firſt Beginning of theſe Obſervations and Collections in *Glouceſterſhire.*

IT may not be improper or unſeaſonable, before I proceed to the brief Account I am going to give of the Bodies in the following Catalogue, to take notice that I began my Obſervations and Collections in Glouceſterſhire; *whither I was invited by Sir* Ralph Dutton, *along with his Lady's Father Dr.* Barwick, *under whoſe Tuition I then was, very happily, he being a Man of great Sagacity, Learning, and an Encourager of all ingenuous Studies. Here I had very generouſly allow'd me all Conveniencies and Aſſiſtances, for the furthering of comparative Anatomy, in which I took great pains; and had all the ſeveral ſorts of Brutes, of Birds, of Fiſhes, that this noble and plentiful Country afforded, readily brought to me for Diſſection. I had here likewiſe, opportunity of carrying on my Botanic Studies, of which being then young, I was very fond, having the honour of an acquaintance with Sir* George Wheeler, *Dr.* Plukenet, *Mr.* Doody, *and ſome other Gentlemen, very famous for the Progreſs they had made in thoſe Studies. Not that I confin'd my ſelf ſo much to this part of Natural Hiſtory, as not to be ready, forward, and deſirous to look into any other; and the Country about* Sherborne, *where Sir* Ralph Dutton's *Seat was, and the neighbouring parts of* Glouceſterſhire, *to which I made frequent Excurſions, abounding with Stone, and there being Quarries of this laid open almoſt every where, I began to viſit theſe, in order to inform myſelf of the nature, the ſituation, and the condition of the Stone. In making theſe Obſervations, I ſoon found there was incorporated with the Sand of moſt of the Stone thereabouts, great plenty and variety of Sea-ſhells, with other marine Productions. I took notice of the like, lying looſe in the Fields, on the plough'd Lands and on the Hills, even to the very top of the higheſt thereabouts. Nay, in many places of this Country, they lay expoſed on the plough'd Lands ſo thick, that I have ſcarcely obſerved Pebles or Flints more frequent and numerous on the plough'd Lands of thoſe Countries that moſt abound with them. This was a Speculation new to me; and what I judg'd of ſo great moment, that I reſolv'd to purſue it thorough the other remoter parts of the Kingdom; which I afterwards did, made Obſervations upon all ſorts of Foſſils, collected ſuch as I thought remarkable, and ſent them up to* London. *Some others were afterwards given me by ſuch curious and intelligent Perſons, as being appriz'd of the uſefulneſs of theſe Studies, turn'd their Thoughts to ſuch Searches. Of which the chief were Mr.* Stone-ſtreet, *and Mr.* Morton, *two Men of great Learning; and the latter deſervedly famous for his* Natural Hiſtory *of* Northamptonſhire.

The Subjects treated of in this Catalogue, the marine, and other extraneous Bodies turn'd out of the Earth.

In the former part of this Catalogue, are ſet forth the Earths, Stones, Minerals, Ores of Metals, and the other Foſſils of England, *thus collected, that are native. In this part, I ſet forth thoſe that are* extraneous, *the parts of Vegetables, and of Animals, more eſpecially thoſe that have belong'd to the Sea, that are now found at Land, and in the Bowels of the Earth.*

The Method in which they are ranged.

As method is the Life of all Buſineſs and Studies, my firſt care was, that the Things exhibited in this Catalogue ſhould be digeſted, as far as might well be, into their proper Claſſes, *according to their mutual Affinities and Relations to each other. That was not indeed ſo practicable in the Vegetables, becauſe there were commonly Leaves of Plants of ſeveral kinds in the ſame Maſs of Stone. But for the parts of Animals, particularly the Sea-ſhells, which are very numerous and various, I hope the method I have diſpoſed them into, will not be thought greatly amiſs.*

The Places where they were found.

Of the Obſervations.

As to the Places where each was found, tho' they be generally noted, it is in moſt very briefly; and the particular Pit, Quarry, or Field, whence each was taken, are not always ſo diſtinctly ſet forth as I could wiſh. The reaſon is, moſt of them were collected in Countries where I was a ſtranger; and ſo not always appriz'd of the names of the Grounds and Tracts of Land, where I took them up. Beſides, in a Journey, and travelling, I could not well allow myſelf to deſcend to more Particulars in this matter; reſerving the time I had to ſpare, for what I thought of much greater moment, I mean, noting the Condition of the Earth, and of the Strata, not only in the places where theſe Bodies were found, but all others, where the Intrails of the Earth happened to be, by any means, diſplay'd and laid open to view. For 'twas from theſe Obſervations, that I have advanc'd what I have ſince publiſh'd, concerning the means by which theſe Bodies were brought to Land, the great Changes the Earth then underwent, the Riſe of the Mountains, the Origin of Springs and Rivers, and the Formation of Metals and Minerals, with ſeveral others of not leſs importance.

A Collation of theſe foſſil Bodies, with the marine; and with like Foſſils found elſewhere.

For thoſe Bodies in this Catalogue that are deſcribed or graved in Books already printed, I propoſe, ſo ſoon as I ſhall find leiſure, to refer to the Places, as well of the Authors who have wrote of the living Shell-fiſh, Ariſtotle, Pliny, *and the Antients; as* Rondeletius, *Dr.* Liſter, *and others of the Moderns; as of thoſe Authors that have ſet forth* Muſæums, *the Writers of* Foſſils, *the* Natural Hiſtories *of particular Countries, and others who have deſcribed or grav'd thoſe that have been digged up out of the Earth. If I am not ſo fortunate as to find Opportunity for this myſelf, thoſe* *into whoſe hands theſe Things ſhall hereafter fall, may well ſupply this defect; it being a thing not difficult for any one, who is Maſter of thoſe Authors, and verſ'd in this part of Natural Hiſtory, to make thoſe Additions, and compleat this Work.*

There is another thing that may eaſily be ſupply'd; which is, making Remarks upon ſeveral Things very well worth Conſideration, that yet are obvious and diſcernible at firſt view, in many of the Bodies exhibited in this Catalogue. 'Twould have been a great pleaſure to me to have done this myſelf, could I have ſpar'd the Time from my Buſineſs, and other more needful Studies.

Remarks upon the Bodies in this Catalogue.

One thing I think may be aſſerted with great certainty, that the Bodies here ſet forth give even ocular Demonſtration, beſides the Proofs from Experiments, that thoſe of them that appear to be of marine Origin, are really ſo: that they differ in nothing from thoſe found now at Sea: and exhibit in themſelves plain Marks that they were all originally brought thence.

Some of the Uſes of this Collection, *e. gr.* to ſhew that the Foſſil Shells, *&c.* are really marine.

Then there are various Phænomena, exhibited by them, that as plainly ſhew, that when they were ſo brought forth at the Deluge, the Earth was deſtroyed, all the Solids of it, Metals, Minerals, Stone, and the reſt, diſſolv'd, taken up into the Water, and there ſuſtain'd along with the Sea-Shells, and other extraneous Bodies: till, at length, all ſettled down again, and form'd the Strata of the preſent Earth. The Shells, and other extraneous Bodies, being thus lodg'd amongſt this ſtoney, and other mineral Matter, that afterwards became ſolid, when this comes now to be broke up, it exhibits Impreſſions of the Shells, and other Bodies lodg'd in it; ſhowing, even the hardeſt of it, to have been once in a State of Solution, ſoft, and ſuſceptible of Impreſſion.

That when thoſe Shells were thus repoſited in the Stone, *&c.* all was in a State of Solution. Hence the Impreſſions of Shells in Stone, and other ſolid native Foſſils.

Theſe marine Bodies are thus found to the tops of the higheſt Mountains, to the bottoms of the deepeſt Mines: and this, as appears from the Catalogues of the foreign Foſſils, with the Obſervations which I have cauſed to be made abroad, on all ſides of the Globe; which ſhews the Diſſolution to have been univerſal.

That there has been a total Diſſolution of the Earth.

Other Phænomena there are of theſe extraneous Foſſils, that prove, that this Havock and Deſtruction was begun in all Parts at the ſame Time, carry'd on, and finiſh'd in the ſame Manner.

That the whole Globe was diſſolv'd all at the ſame time.

When the Shells, thus lodg'd in the Earth, that happen to have been well preſerv'd, come to be broken and examin'd, they are found ordinarily fill'd with metallic and mineral Matter, with

That the Conchitæ and other ſtoney Bodies reſembling Shells, were molded in the Cavities of Shells.

Stone, with Flint, and other, even the moſt ſolid Subſtances; which many Inſtances in this Catalogue give ocular proof of, and in ſuch manner as to ſhew theſe ſeveral hard Subſtances were diſſolv'd, and caſt in theſe Shells, as in ſo many Plaſms or Moulds; they reſembling the inſides of the Shells with as much exactneſs as Metal, Wax, or any other Matter melted and caſt in them, could ever poſſibly have done.

That there happened certain Tranſlocations at the Deluge; the Matter conſtituting animal and vegetable Subſtances being diſſolv'd, and mineral Matter ſubſtituted in its place; there being,

Like Tranſlocations of Metals in ſome Springs.

And in chymical Operations.

Theſe afford Evidence of Senſe, that tho' the Shells, in which they were formed, be periſhed ſince, and gone; this was the true Origin and Method of forming thoſe Bodies, conſiſting of Stone, of Flint, and the like, that by reaſon of their reſemblance of Conchæ, Cochleæ, Echini, *have obtain'd, amongſt the Writers of theſe Things, the names of* Conchitæ, Cochlitæ, *and* Echinitæ. *In ſuch parts of the Water of the Deluge, where there happen'd to be great numbers of Salts, particularly the Vitriolic, ſuſtain'd in the Water along with parts of Trees, and other vegetable Bodies, and with Shells; and the like animal Bodies, the Salts prey'd upon, and by little and little diſſolv'd the parts of the ſaid Bodies: and there happening frequently to be, in the ſame parts of the Water, ſuſtain'd metallic, mineral, flinty, ſparry, or other like Matter; this ſometimes ſucceeded, and was depoſited in the room of the vegetable and teſtaceous Matter, in ſuch method as to form metallic, mineral, ſparry, and flinty Bodies of like Figure, Bigneſs, and Texture with the vegetable and animal Bodies ſo demoliſhed and diſſipated. This was tranſacted in much the ſame manner as we ſee in ſome Springs of* Hungary, *and elſewhere, highly impregnated with vitriolic Salts; which diſſolve the Body of one Metal, ſuppoſe Iron, put into the Spring, and depoſite, in lieu of the irony Particles carry'd off, coppery Particles brought with the Water out of the neighbouring Copper-Mines. This is done in ſuch method that the Maſs of Copper, thus compiled, exactly reſembles the Maſs of Iron ſo demoliſh'd. But more plain proofs of ſuch Change, and ſubſtituting of one Metal or Mineral for another, we have in ſeveral of our chymical Proceſſes, both in the Fire, and by* Menſtruums; *of which I muſt not be allow'd to enter into the Detail here.*

That ſome of the Shells that were lodg'd in Stone, are diſſolv'd, convey'd away, and the Spaces

The Shells, and other Bodies lodg'd at firſt in Stone, and other ſolid Strata, are now commonly miſſing, periſh'd, and gone. For where the Water pervading the Pores of thoſe Strata, happens to be ſaturated with vitriolic Salts, they prey upon the Shells, and diſſolve them; and the Water carrying off the diſſolv'd Particles along with it, leaves the Space before poſſeſs'd by the Shell, now vacant and empty. Such

Spaces.

they poſſeſs'd left vacant.

Spaces occur frequently in Stone, exactly, in all reſpects, of the figure and bigneſs of the Shell ſo deſtroy'd and carry'd away; and of this, there are various Inſtances in this Catalogue. Where the Water happened to carry in it, metallic, mineral, or ſparry Particles, it commonly depoſits them in the Space deſerted by the Shell, ordinarily, 'till it had fill'd it; ſo that the Bodies thus form'd in thoſe Cavities of metallic, of mineral, or of ſparry Matter, muſt of courſe be of the Figure and Bigneſs of the Shell born forth of thoſe Places: and of this, there are numerous Examples in this Catalogue.

That theſe Spaces are frequently now found filled again with ſparry, mineral, and metallic Matter; which therefore carries the form of the Shell departed and gone.

Thoſe Gentlemen who formerly made Obſervations, and Collections of theſe Things, ſeeing the Conchitæ, and other Bodies that had been moulded and form'd in the Cavities of Shells, which yet conſiſted, where the Shell was quite periſh'd and gone, intirely of mineral, ſparry, or other like Matter: ſeeing likewiſe Bodies, of the Bigneſs and Form of Shells, that yet conſiſted alſo of like Matter: and having not inform'd themſelves of the manner how theſe were produc'd, it much perplex'd the Queſtion concerning the true Origin of them; and render'd it ſomewhat intricate and difficult. Inſomuch, that they who had happen'd to make their Obſervations where rarely any but Bodies of ſuch mineral Conſtitution appear'd, they were forward to conclude, that all were ſo, mere Stones, and form'd where they were found, by I know not what Luſus of Nature there. This was particularly the Caſe of Dr. Liſter. *When he firſt wrote, 'tis plain from his own Accounts, he had made very few Obſervations but on the Bodies found in a Brook by* Bugthorp, *and a few others not far from the Place where he then dwelt. Now, as I ſuſpected, and found afterwards upon Inquiry, the Shells there being generally periſh'd, and ſucceeded by ſtoney Matter: and he having ſeen few beſides ſuch, and Stones form'd in the Cavities of Shells, ſince decay'd, being a Man, tho' ingenious, and of ſome Learning, yet very raſh, and precipitate in all his Notions; he immediately pronounced all theſe Bodies meer Stones, and Productions of the Earth. What was worſe, after he had once declared for that Opinion, he was never to be drawn from it. Indeed, Dr.* Plot, *and others, fell ſo readily into the ſame: and it had ſo univerſally obtain'd, when I firſt enter'd upon theſe Studies, that I found it difficult to prevail with learned Men to credit their Senſes, and to ſee that there were, amongſt the reſt, Shells that were real: as alſo, to obſerve how the mineral Bodies, that reſembled them, were form'd by them. Dr.* Liſter *is every where poſitive that theſe are Stones,* Lapides ſui generis, and never any Part of an Animal*: that

That this miſled ſome into the Error that theſe Bodies are of Mineral Nature, Stones and not really Shells.

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* *Philoſ. Tranſact.* N°. 77.

Quarries of different Stone yield us quite different Sorts or Species of Shells, not only one from another,—but from any thing in Nature beſides that either the Land, ſalt or freſh Water doth yield us ‖: *as if the Stone was the Parent of theſe Bodies; and they ow'd their Production, one Species to one ſort of Stone, and another to another. Nay, tho' he afterwards met with plain undeniable Shells; and in a Book* ‡ *that he ſet forth a while after, has given Icons of ſeveral ſuch: though he there expreſſly aſſerts, that he found in a* black Stone, *approaching the Nature of Coal, the very ſame Species of Shell that he found elſewhere in* Iron-Stone **: *and that he found another Species in* Gravel, *which he found alſo in Stone that yielded* Lead, *and in the* Alum Rocks ††, *yet he bravely continued to the laſt firm and unſhaken in his Opinion, that* different Stone yields us quite different Species of Shells: *and would never be brought, to the very laſt, to give it up, though by his own Account, it appears to have had no Foundation, unleſs* Coal, *and* Iron-Stone, *were the ſame thing: or* Gravel, Lead-ſtone, *and the Alum-Rock. But this is but one of very many Inſtances that might be alledg'd of this ingenious Gentleman's Inadvertence and Precipitancy: Which I ſhould ſcarcely take ſo particular notice of, but that 'tis a thing ſo eaſy to be obſerv'd in moſt of the Writers in natural Hiſtory. The reſt of the World do not much regard what they ſet forth; ſo that, where they do not fall foul on one another, their Overſights are neglected. Fill'd with the Satisfaction of their own diſcerning Faculties, they paſs Judgment at firſt ſight; write on, and are above being ever brought to retract it. Nay, 'tis odds but they are rather inſulting others: and endeavouring to diſſettle thoſe Truths that they have eſtabliſh'd. Theſe are the main Reaſons why natural Studies, that are, of all others, of the higheſt Importance, are in the Confuſion and Uncertainty that they are: and it brings into my Mind an Inſcription mentioned by Mr.* Locke, Natura fecit omnes Judices, paucos Artifices.

The Bodies themſelves ſerve to detect Errors concerning them, and to eſtabliſh the Truth.

The Bodies ſet forth in this Catalogue, ſerve as ſo many Evidences and ſtanding Proofs, as well to detect what is wrong and erroneous, as to aſſert what is certain and true. Here are, particularly digg'd up, out of the Earth, great numbers of Shells that differ not in any reſpect, from thoſe that the Land, ſalt and freſh Water doth yield us. *Then there are, in this Collection, very many Inſtances of Shells, that are of* Species *and Kinds as* different *as can be, that yet appear here actually lodg'd, all together, in the ſame Maſs of Stone: as there are others, of the very ſame Species, lodg'd in Flint, in Chalk, in Stone, of various Kinds, in Sand, in Marle, and other Matter as different as can ever poſſibly be.*

‖ Philoſ. Tranſ. N° 77.

‡ Cochlitarum Angliæ Liber. 4°. *Lond.* 1680.

** p. 231, 232.

†† p. 250.

I ſhould have been glad my Affairs had allowed me ſo much Leiſure as to have compared all theſe Foſſil-Shells with the marine, that are found at this day both in ours, and other remoter Seas, in order to the forming a Judgment whence each was brought hither. But that is a great Undertaking: and, after all, the Shores of England *have not been yet ſo carefully ſearch'd, but that we now daily find Shells that had eſcaped the notice of former Naturaliſts. That alſo is the Caſe of moſt foreign Shores; beſides, that there are great numbers there that are never ſent over hither: as there are doubtleſs a much greater number at the remoter bottoms of the main Seas, and the Ocean, that are never brought forth thence to light. That I take to have been the Place of the abode of the* Ammonitæ *and* Conchæ anomiæ; *with a great number of other Kinds, digg'd up here at* Land. *Not but that I have ſeen of both thoſe kinds from Sea, but ſo few that I can take them to be only ſuch as have ſtray'd and ſtragl'd from their main reſidence, and been accidentally intercepted and ſtranded by great Storms. For, were their reſidence nearer the Shores, they muſt needs have been, at this day, obvious and frequent there. For very various Species, of thoſe two kinds, are found in incredibly great numbers at Land, as well in other Parts of* Europe, *as in this Iſland: and ſome of the* Ammonitæ *are ſo vaſtly large, that theſe would ſoon be deſcry'd and found, were there any on the Shores. Thoſe Foſſil-Shells, that are not the Production of the main Deep, but ſuch as I have been able to match with others found on the Shores, and are not the Production of our Seas, are all from the Weſt, and of* American *Extract. I have not yet ſeen any one that was peculiar only to the Eaſt. For there are ſeveral found in the Seas of* Eaſt-India, *and in the* Mediterranean, *that are likewiſe found in the* American *Seas. The reſt, digg'd up here, are of the* Engliſh *Seas: and before all thoſe, that I was ſatisfied were ſuch, I have prefix'd the Letter* [A] *in this Catalogue. Not but that there are ſeveral others that I take to have been likewiſe ſuch, and really the Products of our Seas, to which yet I have not ventur'd to prefix that characteriſtick Diſtinction, till I had Leiſure to compare them more accurately with thoſe found on our Shores. There are particularly in the* 10th Claſs, *both Teeth, and Bones, that I am pretty ſure will be found to be of Fiſh of the* Engliſh *Seas, when they come to be examin'd and compar'd. Others there are that I believe will be found to be of* American *Origin.*

Of the Seas whence the marine Bodies, digg'd up here, were brought.

A CATALOGUE *of the Plants in Stone, contained in the* FIRST CLASSIS.

A ſtrange Plant, but not intire, or ſo plain as that the Kind can be diſtinguiſh'd. *a*. 104. 105.

A vegetable Body with undulated Striæ. *a*. 42.

Leaves of a reticular Texture, not unlike the Skin on the Back of the common Snake. *a*. 4. vid. *a*. 108.

A Plant not unlike the Sea-Fan. *a*. 41.

A large Plant jointed like thoſe of the Cane-kind, and ſtriated. *a*. 73.

Graſs. *a*. 31. 60. 73. 104. 105. 106.

Cyprus-Graſs. *a*. 19. 20. 23, 24. x. 41. 45. 73. 105.

Engliſh Cyprus-Graſs. *a*. 18.

Graſs of the Dactylon or Paniceum-kind. *a*. 20. 21, 21*, 22, 41.

Typha paluſtris max. Park. Raij Synops. p. 278. Nº. 1. *a*. 72.

The Flag, or Iris. *a*. 60. 61. 64. 65. 68. 69. 70 71. 74. 75. 80. 81. 106.

Aloe. *a*. 17. 36. 37. 38. 39. 40.

Equiſetum. *a*. 24x. *. 25. 25*b*. 25*c*. 30. 53. 78.

Equiſetum paluſtre brevioribus. fol. C. B. Raij Synopſ. p. 42. *a*. 26. 26. *b*.

Equiſetum, ſub Aquis repens. *a*. 73. *a*. 111.

A Plant, of the Stellated-kind, like the Aſperula. *a*. 27. x. 28. 29.

A Leaf, appearing to be of the Fern-kind. *a*. 1. Another Species of this. *a*. 2. 107.

Fern. *a*. 44. 46. 54. 60. 73.

Filix mas vulg. a. 27*. †. ☉. 55, 56, 57. 58, 59.

Varietas Filicis maris vulg. Petiver. Raij Synopſ. p. 341. *a*. 66, 67.

Filix mas pinnulis anguſtis non dentatis. a. 5, 60, 61.

Filix mas non ramoſas, pinnulis parvis oblongis non dentatis. a 102.

Filix mas non ramoſa, pinnulis anguſtis raris profunde dentatis. Ger. Raij. Synopſ. p. 48. *a*. 45.

Filix Fæm. vulg. a. 23, 46*, 47, 49, 50, 51, 52, 53, |101.

Filix min. paluſtr. Raij. p. 48. *a*. 27. ††. 29. 31.

Fern approaching the *Filicula montana Rutæ murariæ facie tenerifolia Plucknet Fab*. 181. *f*. 1. *a*. 62.

Polypody. *a* 8. 9. 10. 11. 60. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98.

Seed-bearing Leaves of the *Lonchitis aſpera minor*. *a*. 6. 7.

Oſmunda Regalis. *a*. 16. 24☉. 30. 31. 32. 33. 43x. 78. 79.

A Chamæfilix. *a*. 16.

Ala of a Capillary-Plant like the *Chamæfilix marina Anglica Parkinſoni*. p. 1143. *a*. 12. 81. 82. 83. 84. 85. 99. 100.

Leaves of the *Trichomanes. Parkinſon. Raij Synopſ*. p. 46. *a*. 43*. 44. 46. *conf*. *a*. 109.

Adiantum alb. vulg. Taberm. S. Ruta muraria. C. B. Raij Synopſ. p. 48. *a*. 35.

Adiantum major coriandri folio Raij Synopſ. p.49. *a*. 64.65.
Dryopteris alba : Dod.Park. 1135. *Raij Synopſ.* p. ---- *a*. 74.75.
Filix minor non ramoſa. J. B. Dryopteris *Ger. Filix minor paluſtris repens. Raij Synopſ.* p. 48. N°. 6. Creeping Water-Fern. *a*. 63. 103.
*Abies mas vulg. Raij.*p. 287. *a*. 76.77.

An Account of the vegetable Bodies, Roſin, Roots, Wood, Twigs, Leaves and Fruits, mention'd in the 2d CLASSIS.

Roots of a ſedgy Water-Graſs. *b*. 18.
Roots of Fir-Trees. *b*. 28.
Fir. *b*. 26.27. 31. 35. 37.
A reſinous Matter that the Moſs-Diggers call Frankincenſe. *b*. 36.
Oak. *b*. 30. 38. 39. 40. 41.
Yew. *b*. 32.
Birch-Tree. *b*. 21. 22. 23.24. 25.
A Piece of a Branch of a Tree. *b*. 20.
Pieces of a Shrub like Hazel. *b*. 42. 43.
Hazel-Leaves and Twigs. *b*. 19*.
Juli of Hazel, Alder, *&c*. *b*. 4. 10.
Hazel-Nuts. *b*. 19*. 67. 68. 69.
Cones of the Larix. *b*. 72.
Cones of the Scotch-Pine. *b*. 70. 71.
A Fruit not unlike an unripe Nutmeg. *b*. 73.
Wood petrified. *b*. 45, &c.

Vegetables digg'd up out of the Earth.

Before I drew up the following Account of theſe, I took along with my own, the Judgment and Opinion of four Perſons that have been very converſant with Vegetable Bodies, and are very eminent for their Skill and knowledge in Botany. Theſe were Dr. *Plukenet*, Mr. *Stone-ſtreet*, Mr. *Buddle* and Mr. *Doody*; and we carefully view'd and examin'd every individual Body herein mention'd.

Vegetables digg'd up out of the Earth.

CLASS I.

Leaves of Plants immers'd in Stone.

a. 1. The very ſtrange Leaf on the Surface of this Piece of black Slate, appears to be of the Fern-kind, but different from any thing now any where growing upon the Face of the Earth, that we know of. There appear, on the Back of the Leaf, Bodies not unlike the Veſiculæ of ſome Algæ; but they are flat, and ſtand as thick as they can well by one another. They are placed in Rows, parted from each other by parallel Sulci; but in ſuch Method, that they fall all into a Quincunx Order. On the back-ſide of the Stone is an Impreſſion of a Leaf of the ſame Species. This was digg'd up in *Moſtyn Coal-Pits, Flintſhire*; and ſent me by Sir *Roger Moſtyn.*

a. 2. Another like Leaf, but of a different Species. The Sulci are larger and deeper, and the Interſtices of them greater, than in the former: and the Veſiculæ ſtand at greater diſtance. *Moſtyn Coal-pits.*

a. 3. From the ſame Coal-pits.

a. 4. Impreſſes of ſeveral long Bodies, appearing to be Leaves, of a reticular Texture, not unlike that of the Skin on the Back of the common Snake. *Moſtyn Coal-pits.*

a. 5. An Impreſs of part of the Ala of a Male-Fern of the ſame ſort with that *a.* 60. having the Seed-Veſſels alſo much as that has. There is part of the Leaf of ſome other differing Fern in the ſame Stone. From a Coal-pit in *King's-Wood,* near *Briſtol.*

a. 6. & 7. Parts of Leaves, appearing like the Seed-bearing Leaves of the *Lonchilis aſpera minor. King's-Wood Coal-pits.*

a. 8. A Leaf, ſeeming to be of the Polypody-kind. Found in the ſinking of a Coal-pit in *Preſtcott*-Pariſh, near *Wiggan* in *Lancaſhire.*

a. 9. A Leaf, very little different from the precedent. *Wales. Edward Lhwyd.*

a. 10. & 11. Two Impreſſions of Leaves of the Polypody-kind: and not much differing from the two foregoing. *Wales. Edward Lhwyd.*

a. 12. Part of the Ala of a Capillary Plant, not unlike the *Chamæfilix marina Anglica Parkinſoni, p.* 1143. only the Leaves of this are not ſerrated. *Edward Lhwyd. Wales.*

a. 16. A Leaf of the *Oſmunda Regalis:* and ſeveral Impreſſions of Leaves of the ſame ſort. Alſo, part of an Ala of the Chamæfilix-kind. This piece of Stone lay at the depth of 60 Fathom, juſt above the Bed of Coal, in Mr. *Mountagu*'s Coalery at *Benwell,* not far from *Newcaſtle* upon *Tyne.*

a. 17. This Stone being ſplit, has on one part the Impreſſion: on the other, the Leaf it ſelf, of ſome Plant not unlike the Aloe. *This, and the following to a.* 73. *incluſive, from the Coal-pits at* Farrington, *between* Bath *and* Wells *in* Somerſetſhire. There is in this Stone either Alum or Vitriol; inſomuch, that, being wetted, the Salts ſtart, and the Stone ſhivers, and falls to pieces.

a. 18. Leaves, of a carinated Cyprus-Graſs, probably *Engliſh. Farrington Coal-pits.*

a. 19. Two Leaves of Cyprus-Graſs, a narrower, and a broader, different from each other, and from the precedent.

a. 20. Several Leaves of Graſs appearing to be both of the Culmiferous and Cyprus-kind. x. And on one part is an Impreſſion of a ſhort broad Leaf, ſeeming to be of the Dactylon or Paniceum-kind.

a. 21. A broad ſhort Leaf ſeeming to be of the Gramen Dactylon or Paniceum-kind.

a. 21*. Another Leaf, of the ſame ſort, with a ſlip of the Culm of the Graſs it grew on, ſtill adhering to it.

a. 22. A broad ſhort-leaved Graſs, of the ſame ſort with the two precedent.

a. 23. Narrow and broad-leaved Cyprus-Graſs, of the ſame ſort with thoſe N° a. 19. Alſo, an Impreſſion of the *Filix fæm. vulg.*

a. 24. x. The Stalk of an Equiſetum naked. * Another, ſeeming to be of the ſame ſort, beſet with ſeveral Rounds of Leaves, after the manner of the ſtellated Plants. Theſe Leaves are ſhort, and narrow at the end that is next the Stalk: but broad and obtuſe at the other. The Rounds ſtand at near half an Inch diſtance from each other. † A Leaf of Graſs of the ſame ſort with that a. 20. x. ⊙ An Impreſſion of the common *Oſmunda Regalis.*

a. 25. An Equiſetum. 'Tis of the ſame ſort with a. 24*.

a. 25. b. Another of the ſame. The Impreſſion of another.

a. 25. c. The Impreſſion of another. And a naked Stalk of the ſame ſort of Equiſetum with that a. 24. x.

a. 26. Seems to be an *Equiſetum paluſtre breviorib. fol. C. B. Raij Synopſ. p.* 42. But the Leaves of this Foſſil-Plant are narrower and ſharper pointed.

a. 26. b. An Equiſetum of the ſame ſort with the precedent.

a. 27. x. A Plant of the Stellated-kind. There are 5 Roundels on this Stalk. They are placed at ſomewhat above an Inch interval. In each of theſe there are about 30 Leaves: and they generally at leaſt an Inch in length. It looks at firſt view like an Aſperula: but the Roundles appear to have grown edge-ways, rather than horizontally like thoſe of the ſtellar Plants. Where all the Leaves meet at the Center, in each Round is a ſmall circular Nodus. * An Ala of the *Filix mas vulg.* † Another Male-Fern, with the Pinnulæ more deeply indented. ⊙. *Filix mas vulg.* †† An Ala, ſeeming to be of the *Filix min. paluſtr. Raij.* p. 48. N. 6.

a. 28. A Roundle of the ſtellar Plant, of the ſame ſort with that a. 27. x.

a. 29. Two Roundles of the ſame kind of Plant. And an Ala of the *Filix min. paluſtr.* 27.

a. 30. A Pinnula of the common *Oſmunda Regalis.* Two Equiſeta, the ſame with a. 24. x. & *.

a. 31. A Pinna of the common *Oſmunda Regalis.* Two Leaves of the *Filix Paluſtris minor.* a. 27. ††. & a. 29. and two ſmall Leaves of Graſs.

a. 32. A Top-pinna of the common *Oſmunda Regalis*, with an Auricle at the Stalk, as uſual.

a. 33. Three Pinnæ, ſeeming to be of an *Oſmunda Regalis.*

a. 35. *Adiantum alb. vulg. Taberm. S. Ruta muraria. C. B. Raij Synopſ.* p. 48. N. 1.

a. 36. Part of a broad flat long Leaf, appearing to be of ſome Iris; or rather an Aloe; but 'tis ſtriated without. Within little appears beſides Stone, of the ſame ſort with that of the Stratum in which it lay. Probably the medullar or interior Part of the Leaf being ſucculent, lax, and tender, 'twas partly diſſipated, and partly was abſorb'd and loſt in the ſtoney Matter that inſinuated it ſelf into the Leaf.

a. 37. Another thicker.

a. 38. Two Leaves of the ſame ſort with the precedent, contiguous to each other, and ſeeming to be broke off juſt at their Riſe from the Root.

a. 39. Part of another, with larger Striæ.

a. 40. Part of another, with like large Striæ. This is broader than any of the precedent.

a. 41. Part of a reticulated Plant, not unlike ſome of the ſorts of the Sea-Fans. Alſo a narrow-leav'd Cyprus Graſs, of the ſame ſort with one of thoſe *a.* 19. And a broad Leaf of Graſs of the Dactylon or Paniceum kind, the ſame with that *a.* 20 x.

a. 42. Part of a large vegetable Body, with undulated Striæ. At certain Intervals are double Rows of pretty large Studs.

a. 43. x. An Impreſſion of a large Pinna, of the common *Oſmunda Regalis* *** Three Leaves ſeeming to be of the Trichomanes. *Park. Raij Synopſis, p.* 46.

a. 44. Six Leaves, appearing like thoſe of the Trichomanes. *Vid. a.* 43. ***; but theſe lying parallel, ſeem rather to have been Alæ of the Leaf of ſome Fern. Alſo a Leaf of a Fern, but not ſo plain that Judgment can diſtinctly be made of what kind it is.

a. 45. An Ala of the *Filix mas non ramoſa pinnulis anguſtis raris profunde dentatis. Ger. Raij Synopſ.* p. 48. N. 5. This Foſſil is indeed a Variety of that ſort found by Mr. *Doody* in ſeveral Places near *London*. Along with it are two Leaves of a narrow Cyprus-Graſs.

a. 46. x. An Ala of the *Filix fæm. vulg.* very plain. ** Two Impreſſions ſeeming to be of the ſame. † An Ala like thoſe *a.* 44. *.

a. 47. A large Ala of the *Filix fæm. vulg.* This agrees exactly, in all reſpects, with that * gathered on *Hamſtead-Heath,* xi. *Junij* 1700.

a. 49, 50, 51, 52. Alæ of a Fern little different from the *Filix fæm. vulg.*

a. 53. Two Alæ of the *Filix fæm. vulg. Equiſetum,* of the ſame ſort with *a.* 25. *ſupra.*

a. 54. A large Ala of a Fern, ſomewhat different from the *Filix fæm. vulg.*

a. 55. An Ala of a Fern, extremely fair and plain: different from the *Filix mas vulg.* in that the Pinnulæ are longer, and more indented. 'Tis of the ſame ſort with *a.* 27. † *vid. a.* 56. and *a.* 59. *.

a. 56, 57. Another Ala of the ſame ſort with the precedent; and its Impreſſion on the Slate that was contiguous and adhering to that piece, on which the Ala is, till broken and parted from it.

a.

a. 58. Several Alæ of the ſame ſort ſtill. * An Ala ſeeming to be of the *Filix mas Vulg.*

a. 59. x. An Ala of the *Filix mas Vulg.* * An Ala of the ſame ſort with *a.* 27†. *a.* 55, & *a.* 56.

a. 60. A large Branch of a *Filix mas pinnulis anguſtis non dentatis.* It has not been yet obſerved growing in *England.* There are upon the back of the *Pinnulæ, Puncta ſeminalia* in two Rows: in which order the Seed-veſſels of the Male-fern grow. On the back of the Stone are a vaſt miſcellany of Ferns of ſeveral kinds, Polypody, Graſs, Flags, *&c.* lying in great Confuſion; and there's amongſt the reſt, a Body ſeeming to be the ſtalk of a Fern.

a. 61. This, till broken off, join'd to *a.* 60. and has on it the Impreſſion of the large branch of the Fern above-named. On the back-ſide of it is a Flag.

a. 62. An Impreſſion of a Branch, of a ſmall Fern, approaching the *Filicula montana Rutæ murariæ facie tenerifolia. Plukenet. Tab.* 181. *f.* 1. 'Tis *Engliſh.*

a. 63. An Impreſſion of the *Filix min. non ramoſa. J. B.* or *Dryopteris. Ger. Raij Synopſ.* p. 48. N. 6.

a. 64. A Branch of a Fern, nearly reſembling the *Adiantum major coriandri folio, Raij Synopſ.* p. 49. ſeveral Impreſſes of Flags.

a. 65. Three Alæ of the ſame ſort with the laſt: with 2 or 3 Leaves of the Flag-kind.

a. 66. Alæ and Impreſſions of the *varietas Filicis maris vulg. Petiver. Raij Synopſ.* p. 341. Theſe have the Seeds on the Backs, near the Edges of the Pinnæ.

a. 67. Another Ala, of the ſame ſort; with the Seeds in like manner.

a. 68. Two or three Leaves broken off juſt at the Riſe from the Root, ſtriated, of the Flag-kind.

a. 69. Part of two Flags, ſtriated, but deeper on one ſide than the other.

a. 70. Impreſſions of both the carinated and concave ſide of ſome Flag.

a. 71. Two broad Flags, pretty ſmooth, lying a-croſs each other.

a. 72. The *Typha paluſtris max. Park. Raij Synopſ.* p. 278. N. 1.

a. 73. An Impreſſion of ſome large Plant, jointed like thoſe of the Cane-kind, and ſtriated. An *Engliſh* Equiſetum, of that ſort that is termed *ſub Aquis repens.* On the back-ſide of the Stone is a Miſcellany of Fern-Leaves, and Graſs, particularly a broad-leaved Cyprus Graſs.

a. 74. A piece of Stone, having on it part of the Leaf of an Iris: and a ſmall Fern appearing to be the *Dryopteris alba Dod. Park.* 1135. *Conf. a.* 75.

a. 75 Another Piece of Stone, broken off from the precedent, having on it Impreſſions of the Iris and Fern above-mentioned. From the Coal-pits at a little Village called *Street,* near *North-*

Byerly, about three Miles from *Market-Bradford, Yorkſhire.* They have now deſiſted from working in this Pit; and the Plants are found in none of the others thereabouts.

a. 76. *Abies mas vulg. Raij p.* 287.

a. 77. The Impreſſion of that *Abies.* The two pieces of Stone, on which are this *Abies*, and the Impreſſion, were originally contiguous and united. From the Coal-pits at *Street, Yorkſhire.*

a. 78. A piece of Stone, having on it ſeveral Impreſſions of Leaves ſingle, ſeeming to be of the *Oſmunda Regalis.* Alſo one round of the broad-leav'd *Equiſetum, a.* 24*. & *a.* 25.

a. 79. The piece of Stone that was contiguous and united to the foregoing; with the Leaves of *Oſmunda* upon it. From the ſame Coal-pits.

a. 80. Part of a Flag. From the ſame Coal-pits.

a. 81. The Impreſſion of a Flag, and of a capillary Plant, not much unlike that *a.* 12. From the ſame Coal-pits.

a. 82. A capillary Plant of the ſame ſort with the precedent: and from the ſame Coal-pits.

a. 83. A piece of a ferruginous ſtoney Nodule having in it 3 Leaves of a capillary Plant not unlike thoſe of *a.* 12. but larger. Indeed they ſomewhat reſemble the Leaves of the *Oſmunda Regalis*, only that they are ſhorter. *Kenton* Coal-pits. Theſe Nodules, with Leaves in them, are called *Catheads*, and ſeem to conſiſt of a ſort of Iron-Stone, not unlike that which is found very plentifully at *Robinhood's-Bay* in *Yorkſhire*, and in the Rocks near *Whitehaven* in *Cumberland:* where they there call 'em *Cat-Scaups*, and are frequently melted with the ſofter Iron-Ores. Theſe perhaps differ not much from thoſe deſcribed by Dr. *Liſter de Font. Med.* by the Name, as I remember, of *Minera ferri pilæformis*, called *Ball-Mine* in *Staffordſhire.* Theſe *Catheads* are found only at *Kenton*, which is about two Miles to the Northward of *Newcaſtle:* and *Newbiggin*, about a Mile to the Weſtward of *Kenton.* Thoſe of *Kenton* attend the Stratum of Coal; but lie in a Bed of blue Chiver, about a Fathom thick, and have another Stratum of black Chiver of the ſame thickneſs lying under them. They are generally about 6 or 7 Fathom from the Coal. Thoſe of *Newbiggin* are but 3 Fathom above the Coal. They have not always Leaves in them; indeed, not above one in five or ſix. When freſh taken forth, they break difficultly and irregularly; but when expoſed a while to the Air, they ſplit eaſily, and part at the Leaves. They are of ſeveral Sizes, from the bigneſs of a Walnut to that of a Man's Fiſt. They are found pretty plentifully: and at about the depth of 40 Fathom.

a. 84. A piece of ferruginous ſtoney Nodule, with ſeveral Leaves of the ſame ſort with thoſe of the precedent. *Kenton* Coal-pits.

a. 85. Another piece of the ſame Stone, and formerly united to it. It has the Impreſſion of the ſaid Leaves upon it. *Kenton* Coal-pits.

a. 86, 87. A Leaf, and Impreſſion, approaching the Polypody Kind, of the ſame ſort with *a.* 8. on the two divided pieces of a ferruginous Nodule. From *Kenton* Coal-pits.

a. 88, 89. A Leaf and Impreſſion of the ſame ſort of Plant, on the two divided pieces of a like Nodule. From *Newbiggin* Coal-pits.

a. 90, 91. A Leaf and Impreſſion of the ſame, on the pieces of another like Nodule. From the ſame Coal-pits.

a. 92, 93. A ſmall Leaf and Impreſſion of the ſame on the pieces of a like Nodule, but leſs. From the ſame Coal-pits.

a. 94, 95. A larger Leaf and Impreſſion of the ſame, on the formerly contiguous pieces of a like Nodule. From *Kenton* Coal-pits.

a. 96. The top part of a Leaf of the ſame, but leſs, on part of a like Nodule. *Kenton* Coal-pits.

a. 97, 98. Five ſmall Leaves of the ſame, with their Impreſſions on the piece of the Stone that was contiguous. *Newbiggin* Coal-pits.

a. 99. A ſmall ferruginous ſtoney Nodule, having on it a Capillary, rather more nearly approaching the *Chamæ-filix Marina Angl.* than *a.* 12. 'Tis not ſerrated.

a. 100. A piece of Stone with the Impreſs of the ſaid Capillary on it. This tallies with the other piece, and was broke off it. Theſe two, 9 & 100, from the ſame Coal-pits with the foregoing.

a. 101. A Branch of the *Filix fæm. vulg.* or ſome Fern very like it. And an Impreſſion of a Branch with Leaves a little ſhorter, otherwiſe not different. From the Coal-pits at *Farrington, Somerſetſhire.*

a. 102. An Impreſſion of a Fern not yet deſcribed, but may be fitly called *Filix mas non ramoſa, pinnulis parvis oblongis non dentatis.* *Farrington* Coal-pits.

a. 103. An impreſſion of the *Filix minor non ramoſa. I. B. Dryopteris. Ger. Filix minor paluſtris repens. Raij. Synopſ. p.* 48. *N.* 6. Creeping Water-Fern. *Farrington* Coal-pits.

a. 104. An Impreſſion of ſome ſtrange Plant, about 6 Inches in length, tho' not intire; and ſomewhat above ¼ of an Inch broad. 'Tis not ſo plain, as that one may diſtinctly make Judgment of it. There are with it a mighty Miſcellany of other Leaves, chiefly of Graſs, lying in a confuſed and diſorderly manner in the Stone. *Farrington* Coal-pits.

a. 105. An Impreſſion of part of a Plant of the ſame ſort with the precedent. There are alſo ſeveral ſorts of Graſſes both of the Cyprus and Culmiferous Kinds, ſome with broader, others with narrower Leaves. *Farrington* Coal-pits.

a. 106. A very thin Leaf ſtriated, and long like a Flag, with a Leaf of Graſs lying a-croſs underneath it. *Farrington* Coal-pits.

a. 107. A broad flat Body ſulcated with *5 Sulci,* at ¾ of an Inch diſtance from each other. 'Tis not much unlike *a.* 2. *Farrington* Coal-pits.

a. 108. A Piece of a black ſlatey Stone, out of the *Canal* Coal-pits near *Haigh, Lancaſhire.* The Colliers there call it *black Baſt.* The Colliers about *Durham,* and *New-Caſtle,* call this ſort *Plate.* The Stratum of this is about a Yard thick, lies 120 Foot deep, and 30 Foot above the Canal-Coal. There is upon this Slate an Impreſſion of a Body that hath its Surface reticulated in a Quincunx Manner, and much like what might be made by the Bark of the Branches of the common Fir, after the Leaves are fallen or ſtript off; that having little Flakes ſtanding in that manner.

a. 109. A Branch of ſome Capillary Plant, ſomething reſembling the common Trichomanes, only the Pinnæ are larger, in a dusky grey ſlatey Stone, which the Workmen call *White Earth.* Found 70 Foot deep, in ſinking a *Canal* Coal-pit, near *Haigh,* in *Lancaſhire.*

a. 110. A Branch of a Capillary Plant, of a different Species, having the Pinnæ narrower, and dentated, lodg'd in the ſame ſort of Stone: and found in the ſame Stratum with the former.

a. 111. An Impreſſion of ſome Species of Equiſetum, upon like Stone, ſeeming to be of the *Equiſetum ſub aqua repens.* Out of the ſame Stratum. This ſort of Equiſetum is found here pretty commonly. I have ſeen Parts of it to three or four Inches in length.

a. 112. Two Leaves, of the Fern-kind, very fair, each of a different Species, on a blackiſh grey Slate. From *Swanſey* Coal-pits. *Glamorganſhire.*

a. 113. Part of a flat Body, oblong, thinning ſomewhat towards the Edges, near 5 Inches in length, 2 in breadth, and $\frac{1}{8}$ of an Inch in thickneſs. The 2 Surfaces are cover'd over with a Quincunx Work, the Panes of which riſe gradually towards the middle; where there is a little oblong Dimple in each. Out of the *Canal* Coal-pits at *Haigh, Lancaſhire.*

a. 114. Impreſſions of long, flat, ſtriated Leaves; having Appearances of Joints at certain Intervals; upon a dark grey ſlatey Stone. The Stratum of this lay at the depth of about 25 Fathom, in *Branſty-Cliff,* by the Duke of *Somerſet*'s Salt-Pans, near *Whitehaven.* The Stratum was one Foot and $\frac{1}{2}$ thick: and, upon the breaking the Stone, Leaves of Plants appear'd very thick in all Parts of it, where the Grain of the Stone was thus fine and denſe. But where it happened to be more gritty, coarſe, and lax, there was not one Leaf to be met with. *All the following to a.* 138. *incluſive* were taken out of the ſame Stratum. 'Tis obſervable, that thoſe in this, and the following Pieces of Slate, to *a.* 117. appear to be of the ſame kind with thoſe *a.* 36. *& ſeqq.* which were found in a Coal-pit near *Farrington,* in *Somerſetſhire.* And indeed, there were found 3 or 4 other kinds of Plants here, that were alſo found there.

a. 115. *a.* 116. *a.* 117. *a.* 118. *a.* 119.

a. 120. A Body, appearing to be like the Kernel of ſome Plant. Alſo the Ala of a Leaf of the Fern-kind.

a. 121. Another Ala.

a. 122. Part of another.

a. 123. Part of another.

a. 124. Part of another.

a. 125. A ſingle Leaf of another, very large.

a. 126. Single Leaves of the ſame Species of ſeveral Sizes; alſo an *Equiſetum* appearing to be of the ſame Kind with that *a*. 26. *ſupra*. which was found in *Farrington* Coal-pits.

a. 127. *a*. 128. *a*. 129. *a*. 130. *a*. 131. *a*. 132. *a*. 38. *a*. 134. *a*. 135. *a*. 136.

a. 137. A long, flat, narrow Leaf, not unlike that of a Reed, or Graſs; but having Joints at about an Inch diſtance from each other.

a. 138.

CLASS II.

PARS I.

Marſh, or Turf-Earth, having lodged in it Nuts, Twigs of Trees, and Shrubs, Graſs, Sedge, &c.

b. 1. From *Godalming* in *Surrey*.

b. 2. Found in ſinking a wet Dock at *Deptford*. *vid*. *b*. 39. & *b*. 68.

b. 3. From *Hamſtead-Heath*.

b. 4. From *Wilmeſlow* near *Knutford, Cheſhire*. This ſort lies uppermoſt in the Moſs, and next the Surface. It ſeems to be made up only of the Shives or Husks, and other parts of *Juli*, of *Hazel, Alder, Poplar*, &c. *vid*. *b*. 10. *infra*. The *Juli* are in being only in the Spring Seaſon. There are quantities of this ſort of Turf in the North parts of *Yorkſhire*, and in the Biſhoprick of *Durham*. It lies ever at the Surface above all. 'Tis ſeldom above a Foot in thickneſs; but extended frequently for 2 or 3 Miles together. 'Tis found chiefly on the flats of Mountains.

b. 5, & 6. From the ſame place. This ſort lies under the former: and there are Trees lodg'd and bury'd in it. At the bottom of *Wilmeſlow-Marſh*, they meet with a reddiſh Sand.

b. 7. Dug up on the Shore near *Outhorn, Yorkſhire*.

b. 7*. Peat, the ſofter ſort, within a Foot of the Surface. *Arkendale*.

b. 7†. Peat, the firmer ſort, lying a Foot deeper than the precedent.

b. 8. Fell-Moſs. From *Kendal, Weſtmorland*.

b. 9. Moſs Earth. From *Kendal*.

b. 10. From *Kendal* alſo. This ſeems to be the chaffy parts of *Juli*, of *Alder*, &c. *vid*. *b*. 4. *ſupra*.

b. 11. From the Marſhes in *Windſor-Foreſt*.

b. 12. From the Marſhes in *Windſor-Foreſt*.

b. 13. From the Marſhes in *Windſor-Foreſt*.

b. 14. From the Marſhes in *Windſor-Foreſt*.

b. 15. From the Marſhes in *Windſor-Foreſt*.

b. 16. From the Marſhes in *Windſor-Foreſt*.

b. 17. From the Marſhes in *Windſor-Foreſt*.

b. 18. Roots of a ſedgy Water-Graſs. From the Marſhes in *Windſor-Foreſt.*

b. 19. From the Marſhes in *Windſor-Foreſt.*

b. 19*. Earth with Nuts, Twigs, and Leaves of *Hazel.* Dug up in the *Iſle of Wight.* The *Hazel* Leaves were apparent and diſtinguiſhable when the Earth was firſt dug up and moiſt; but ſince they were opened and expoſed to the Air, they are periſh'd, and now hardly diſcernible. *vid. b. 69.*

b. 19†. Peat-Earth, with numerous Roots, Culms, and vegetable Bodies in it. From a Moor near St. *Anns, Cornwall.* The common Turf of all the Moors, which are very frequent in *Cornwall,* is of this ſort.

b. 19x. Peat-Earth very fine, ſeeming to be compoſed almoſt intirely of flakes and parts of rotten Wood. Found in the ſame Marſh with *b.* 44†. a Mile from *Langron.*

CLASS II.

PARS II.

Parts of Trees and Shrubs found bury'd under Ground.

b. 20. Part of the Branch of a Tree found bury'd with *b.* 3. *Hamſtead-Heath.*

b. 21, 22, 23, 24, 25. Pieces of Branches of a Birch-Tree found in the Peat-Moſſes, in *Windſor-Foreſt,* with *b.* 11, *&c.*

b. 26. Firr. From ---- Marſhes in *Cumberland.* Dr. *Nicholſon* Lord Biſhop of *Carliſle.*

b. 27. A piece Firr-wood dug up in *Brigſteer-Moſs* near *Kendal, Weſtmorland.*

b. 28. A piece of the Root of a Fir-Tree, dug up alſo in *Brigſteer-Marſhes.*

b. 29. From the Shores at *Outhorn,* dug up with *b.* 7.

b. 30. Oak which is the common Moſs-wood at *Wilmeſlow*; found with *b.* 5.

b. 31. Firr, from the ſame Moſſes at *Wilmeſlow.*

b. 32. Yew, from the ſame Moſſes.

b. 33. Alſo from *Wilmeſlow* Moſſes.

b. 34. From the ſame Marſhes.

b. 34*. Still from the ſame Moſſes.

b. 35. A Piece of Wood appearing to be Firr. Part of it is burnt, or charr'd. From *Wilmeſlow* Moſſes likewiſe.

b. 36. A reſinous Matter found lying between the Bark and the Wood of ſome of the Trees dug up in *Wilmeſlow* Moſſes. They call it there Frankincenſe. [*Reſinam mittit candidam, Maſtichi ſimilem vel Thuri.* Th. Barthol. *Hiſt.* 72. *Cant.* 5. *ex Stelluto de Ligno Foſſili Umbriæ.*]

b. 37. A Piece of Firr, from the Moſſes near *Wiggan, Lancaſhire.*

b. 38. Oak, from the ſame Moſſes.

b. 39. Oak, dug up at *Deptford,* with *b.* 2. & *b.* 68.

b. 40. & 41. From the ſame Place; where were found large and entire Oak-Trees, and ſome other ſorts of Trees likewiſe.

b. 42. & 43. Two Pieces of a Shrub, ſeeming to be Hazel, dug up, with the Nuts, *b*. 19*, in the *Iſle of Wight*.

b. 44. From the Moſſes of ------ in *Lincolnſhire*.

b. 44*. Wood, very rotten, and friable, found in pretty large Pieces lodg'd in the Stone of a Quarry at *Marſham* near *Abington*.

b. 44†. Wood, light, and rotten; out of a Stratum of Bituminous Earth, about a Mile from *Langron* in *Cumberland*. The Stratum in which this Wood was lodg'd was about 3 Foot thick, and lay under a Stratum of Rubble that was 10 Foot thick. There were in the ſaid Stratum Parts of the Trunks of Trees, Leaves, Sprays of Shrubs, and other Vegetable Subſtances in ſuch Quantity, that the far greater Part of the Stratum ſeemed to be compiled of them.

b. 44*. A Piece of Firr-Wood from the Peat Marſh of *Scaleby*, about 4 Miles from *Carliſle*.

b. 44 ⧺. Two Pieces of Wood, much impaired and decayed, with ſome ſmall Quantity of a black Bituminous Matter inſinuated into them dug out along with the Hazel-Nuts, *b*. 69. in the *Iſle of Wight*.

b. 44 ⁜. A Piece of Wood having manifeſt Marks of its having been charr'd, or burnt by Fire before it was bury'd in the Earth. Dug up with the precedent. 'Tis not unuſual to meet with Wood thus burnt, repoſited in the Bowels of the Earth. I have found it alſo in the Peat-Marſhes of *Cheſhire*, and elſewhere. And *G. F. de Oviedo* obſerved charr'd Wood in Virgin-Earth, *i. e.* Earth that had never been dig'd in or diſturbed, at conſiderable Depth in the Gold-Mines of *Peru*. Vid. *Purchas Pilgrims. l.* 5. *c*. 3. *p*. 971. *c*.

CLASSIS II.

PARS III.

PREFACE.

This ſort of Wood is found moſt commonly in Strata of Gravel or Sand: and ſometimes in Stone, Clay or Marl. All that I have ever obſerved of it was alter'd and increaſed in Hardneſs and Weight, either by Inſinuation of ſtoney and mineral Matter during the Time that theſe and other Bodies were ſuſtained among the diſſolved ſtoney and mineral Matter, in the Water of the Deluge; or by a total Solution of the Vegetable Subſtance, and a Succeſſion of ſtoney Mineral or Metallic in its ſtead. What hath been imagin'd by ſome, that this Alteration was made ſince, by petrifying Water, is without Reaſon, or any good Obſervation to countenance it. Even that which is found in Lakes, and in Rivulets, was originally lodged in the Earth at the bottom of them, and petrified before 'twas repoſited there. In particular, a more accurate Enquiry, and Tryals, have ſhewn that what was formerly pretended of the petrifying Power of Lake Oneagh *in* Ireland, *is not true: and the Water makes no ſuch alteration upon any Wood that is put into it; the petrified Wood that is brought thence, being of that which was originally lodged in the Earth at the bottom of the Lake. I inſtance in the Wood brought out of this Lake, becauſe it* *is frequently inſiſted upon: and more Notice has been taken of it than of any other. As to the ſtoney Incruſtation of Wood, and other Bodies, I give an Account of them in the former Part of this Catalogue*, p. ---

Wood Petrified.

b. 45. Found in a Gravel-pit, near *Aſpley*, *Bedfordſhire*.

b. 46. From the Bank of *Ruſhton-Brook*, *Northamptonſhire*.

b. 47. From *Aſhley*, in *Northamptonſhire*. This has Veins of white Spar in it.

b. 48. From *Clipſton-Quarry*, *Northamptonſhire*.

b. 49. From the Shores near *Harwich*.

b. 50. Dug up in Mr. *Malcolm's* Yard, at *Southrey*, in *Norfolk*. It lay about two Foot deep in a brown ſandy and gravelly Soil.

b. 51. From ------ *Bedfordſhire*.

b. 52. This ſtrikes Fire with a Steel. From *Wanden-Heath*, *Bedfordſhire*.

b. 53. Out of Clay, near *Tunbridge*.

b. 54. Found, with other Pieces, ſeveral larger, in a Stratum of Stone in *Hampnet-Quarry*, *Glouceſterſhire*.

b. 55. From the Shores of *Severn*.

b. 56. From the Shores of *Shepey-Iſland*, *Kent*.

b. 57. From ----- *Northamptonſhire*. Mr. *Morton*.

b. 58. From a Stone-pit near *Crick*, *Northamptonſhire*.

b. 59. From the ſame Stone-pit.

b. 60. From the ſame Stone-pit.

b. 61. Found very deep in the Stone-pits of *Halſton*. Mr. *Morton*.

b. 62. Found inclos'd in Stone, in a Quarry at *Aſhley*, *Northamptonſhire*.

b. 63. From a Quarry near *Iſlip*, *Oxfordſhire*. There was a large Quantity of it, but ſo rotten as hardly to be taken out entire. Pieces of Wood occur pretty commonly in the Quarries of *Oxfordſhire*.

b. 64. Found in a Gravel-pit near *Wellham*, *Leiceſterſhire*.

b. 65. From *Llany Monach Cave*, near *Oſweſtry*, *Shropſhire*.

b. 66. From a Chalk-pit, near *Cambridge*.

b. 66*. A Piece of a Stick, ponderous, gloſſy, of the Conſtitution of the common Vitriolic Pyrites, as having its Pores ſaturated with the conſtituent Matter of the Pyrites. Found on the Shores, among ſeveral Pyritæ, near *Portſmouth*. I have frequently obſerv'd on the Shores of the *Thames*, below *Graveſend*, and on the Sea-Shores of *Kent* and *Eſſex*, Pieces of Wood, ſome branch'd, others with Knots; and all having apparently the Grain, Fibres and Texture of Wood, that were thus alter'd by Inſinuation of this mineral Matter. And ſo great is the Quantity of this Matter in them, that when the vitriolic Salts, in ſome of them that I kept by me, began to ſtart and ſhoot, as thoſe in the Pyrites are wont to do when kept in a warm humid cloſe Place, the whole Bodies fell all to pieces, and appear'd in Form of a dusky grey Powder with Salts amongſt it, exactly like the vitriolic Pyrites, and without the leaſt Appearance of any Wood or Vegetable Matter amongſt it. But the Compages and Conſtitution of that is doubtleſs diſſolv'd by the Action of the Salts in ſhooting, as ſet forth above.

CLASSIS II.

PARS IV.

Nuts and other like Fruits found in the Earth.

b. 67. Hazel-Nuts, from the Shores of *Outhorn.* Found with *b.* 7. & *b.* 29.

b. 68. Hazel-Nuts, dug up with *b.* 2. & *b.* 39. at *Deptford.*

b. 69. Hazel-Nuts, from the *Iſle of Wight*, found with *b.* * 19. Out of many hundreds of them I have choſen theſe: and took care to pick ſome of the largeſt and faireſt that I could. 'Tis plain, at firſt View, that the far greateſt part of them were not full grown, or near ripe. I have open'd many of them, particularly of the largeſt, but found them hollow, and quite empty; except only one of the largeſt which had the Kernel very plain, and of the uſual ſhape, but ſhrunk, much ſmaller than uſual, and hardly ſo big as a Vetch. Mr. *Stoneſtreet* ſaw it with me. Had the Kernels attain'd to any conſiderable Growth and Conſiſtence before the Nuts were thus bury'd, they would have remained to this day; the Shells of many of them being firm and cloſe, and ſuch Kernels being, when incloſed in the Shells, more likely to be preſerved in this cloſe Earth than the Leaves of Hazel, which are frequently found. Of all the Foſſil-Nuts I have ever ſeen, either in the *North*, the *Iſle of Wight*, or any other Part of *England*, tho' ſome few, perhaps by reaſon of ſome particular Advantage of Situation and Sun, are ſomewhat larger; yet the generality of them appear to be of about the Growth and Condition that Hazel-Nuts uſually are at the end of *May* or beginning of *June*: and the Deluge began at that time of the Year †. I have obſerved that the Nuts got off the Trees at that time, have not only the Bulk and Appearance that theſe Foſſil ones have: but likewiſe that, if kept a while, they are in like manner hollow and empty; tho' when freſh got they be full of a ſoft pulpy Matter, which in time tranſpires and paſſes through the Shell. Not but that ſometimes in the recent Nuts I have obſerved a ſmall Kernel remaining like that mention'd *b.* 69. There are Nuts, that appear to have been not ripe when repoſited there, dig'd up, in great Numbers, about 10 Foot deep, in an original Stratum in *Miln-Cloſe* Lead-Mines, in *Darly* Pariſh, in the *Peak*. Mr. *Hodgkinſon. Carew* in his Survey of *Cornwall*, p. 12. mentions Nuts found in Peat-Earth two Miles Eaſt of St. *Michael*'s Mount.

b. 70. Six Cones of the *Scotch* Pine, taken out of Lindan Moſs in *Cheſhire*. Theſe Cones are fully ſpread and open'd in ſuch manner as when they caſt their Seed: and ſeem to be of above two Years growth upon the Tree.

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† *Nat. Hiſt. Earth. Part* 3. §. 2. *Conſ.* 5.

b. 71. Six other Cones of the ſame ſort of Pine which are not open'd and of a growth later than the former by a year. The former are firm and entire, but theſe being younger and tenderer, are ſomewhat decayed. Found along with the former. Theſe are of the Growth and Bigneſs that this Order uſually is arrived at about the end of the Month of *May*.

b. 72. Three Cones ſeeming to be of the Larix. From *Cherry-Hinton* Chalk-pits near *Cambridge*. Theſe were not come to ripeneſs or maturity.

b. 73. A Fruit taken out of a Stratum of Gravel in a Pit near *Dorcheſter, Oxfordſhire*. Mr. *Doody* thinks this a ſort of Nutmeg, which Fruit before it is ripe, is ſpongy and hollow.

ANIMALIUM PARTES EX TELLURE EFFOSSÆ.

CONCHYLIA.

CLASSIS I.

Conchylia univalvia.

PARS I.

Conchylia univalvia tubuloſa.

SECTIO I.

Conchylia Tubuloſa figuræ indeterminatæ: ſeu VERMICULI.

c. 1. A Vermiculus. From the Chalk-pit, near *Greenhith, Kent.*

c. 2. From a Stone-pit on *Cowley* Common, near *Oxford.*

c. 3. & 4. From the Chalk-pits at *Northfleet, Kent.*

c. 5. From the Chalk-pit near *Haſtingfield, Cambridgeſhire.*

c. 6. From *Woodſtock-Park, Oxfordſhire.*

c. 7. From *Godſtow* near *Oxford.*

c. 8. From a Clay-pit at *Lambeth.*

c. 9. From the Fields by *Stow* on the *Wolds, Warwickſhire.*

c. 10. From a Quarry near *Farmington, Glouceſterſhire.*

c. 11. From a Field near *Burford, Oxfordſhire.*

c. 12. A Vermiculus growing to a Piece of a *Pinna Marina.* From the great Chalk-pit at *Northfleet, Kent.*

c. 13. A Vermiculus with a coarſe Peble ſticking to it. From a Gravel-pit, near *Wheatland's-Mill*, beyond *North-Leach, Glouceſterſhire.*

c. 14. A Vermiculus growing to a *Concha Anomia. Sherborn-Park, Glouceſterſhire.*

c. 15. Many Vermiculi ſticking to a *Concha Anomia.* From *Winchcomb, Glouceſterſhire.*

c. 16. Many ſmall Vermiculi ſticking to a Shell of the Tree-Oyſter-kind. Found near *Cowln-Deans, Glouceſterſhire.*

c. 17. Several very large Vermiculi in a Maſs of Stone, along with numerous Fragments of other Shells. Found near *Oxendon*, in *Northamptonſhire.* Mr. *Morton.*

c. 18. A *Congeries*, or Cluſter of Vermiculi, found in the Gravel-pit, near *Oxendon-Church, Northamptonſhire.*

c. 19. Another leſs Cluſter, found near *Cirenceſter, Glouceſterſhire.*

c. 20. Another found near *Witney*, in *Oxfordſhire.*

c. 21. *Vermiculi teſta quadrangulari.* From a Gravel-pit $\frac{1}{4}$ of a Mile Weſt of *Braybrook.*

c. 22. A Congeries of ſmall Vermiculi. From a Stone-pit, near the Mill, at *Werkton, Northamptonſhire.*

c. 23. Another from the ſame Place.

c. 24. Another from the Chalk-pit at *Purfleet, Eſſex.*

c. 24 x. A Cluſter of Tubuli of *Vermiculi marini*, very large. Found in a Stone-pit on *Bullington-Green*, near *Oxford.*

c. 24 *. A Piece of a Tubulus, having on one ſide Impreſſions of very ſmall Knobs upon it, ſet in a Quincunx Order, which Impreſſions it took, when growing, upon the Shell of an *Echinus Spatagus.* From the Chalk-pits at *Greenhith.*

c. 24 †. Two Tubuli, twiſted, having circular Fibres, very groſs and plain. They are affix'd on a Piece of a *Pinna Marina.* From a Chalk-pit, near *Northfleet, Kent.*

CLASSIS I.

PARTIS I.

SECTIO II.

Conchylia Tubuloſa, curva, verſus unam Partem gracileſcentia, ſeu Dentalia.

c. 25. & 26. Two ſmall Pieces of a grey ſtoney Matter, with the Surface black and ſhining, which ſeem by the Shape to have been each form'd in the Shell of a Dentale. Found in a grey Limeſtone, at *Folkſton-Cliff*, near *Dover, Kent.*

c. 27. Two Pieces, ſeeming to be Parts of the Dentale, lodg'd in Stone. From the Cliffs near *Minſter*, in the Iſle of *Sheppey, Kent.*

c. 27*. A Dentale, [A] out of *Cowley* Quarry, near *Oxford.* It ſeems to be *Engliſh:* and of a Species that we ſometimes find on the Weſtern Coaſts.

CLASSIS I.

PARS II.

Univalvia Diſcoidea: ſeu PATELLÆ.

c. 28. A Patella, with circular Ridges about it. From the Stone-pit at *Teynton.*

c. 29. Another. This, the two following, and *c.* 35. were given me by Mr. *Jackſon*, who died ſuddenly after, without having acquainted me where he found them. He was very curious: and caus'd Searches to be made after theſe things, in moſt Parts of *England.*

c. 30. Another.

c. 31. Another.

c. 32. A ſmall Patella, beat out of the Stone of a Quarry near *Eaſtington* in *Glouceſterſhire.*

c. 33. Another ſmall Patella, found in a Stone-pit at *Auleſworth*, *Glouceſterſhire*.

c. 34. A ſmall Patella mention'd by Dr. *Liſter* in *Hiſt. Conch. lib*. 4. *Fig*. 28. under the Title of *Patella exigua alba, cancellata, Fiſſura notabili in margine*. 'Twas found in *Harwich-Cliff*. 'Tis an *Engliſh* Shell, and found, at this day, upon the Coaſt of *Cornwall* and *Devonſhire*.

c. 35. A larger. Mr. *Jackſon*. vid. *c*. 29. *ſupra*.

CLASSIS II.

TURBINATA.

PARS I.

Turbinata Figurâ compreſſâ, claviculæ ſeu volutæ apice non eminente.

SECTIO I.

Claviculâ intus reconditâ: ſeu NAUTILI.

d. 1. *Nautilus Græcorum*. Dug up in the Clay-pit near the Wells at *Richmond, Surrey*. This Species is found living at this day both in ſeveral Parts of the Mediteranean-Sea: and on the Coaſts of *America*.

d. 1*. Another, of the ſame Species, and found 60 Foot deep in the ſame Pit, fill'd chiefly with Pyrites. 'Tis broke in ſuch a manner as to ſhew the interior Conſtitution of the Body; by which means it appears to be really and indubitably a Shell of this Species.

d. 2. Another found at neather *Slaughter, Glouceſterſhire*. I caus'd this to be ſaw'd in two, to ſhew the interior Fabric of it. 'Tis near fill'd with a grey Spar; but there are plain appearances of the tranſverſe Partitions and ſpinal Fiſtulas of the Shell. Dr. *Liſter* has grav'd it, *L. de Buccinitis*. N° 24. 25.

d. 3. This and the *following to d*. 10. *are all of the ſame Species: and were dug up in the Clay-pit at* Richmond, above mention'd.

d. 4. *d*. 5. *d*. 6. *d*. 7. *d*. 8. *d*. 9. *d*. 10.

d. 11. Another ſtill of the ſame Species, found amongſt other Shells 114 Foot deep, in ſinking a Well at *Kenſington* Gravel-pits, in a Bed of blue Clay.

d. 12. *Banbury. Oxfordſhire*.

d. 13. Ibid.

d. 14. Near *Einſham-Ferry, Oxfordſhire*.

d. 15. A Nautilus, in which the Marks of the Diaphragms appear on the out ſide of the Shell. vid. *Muſeo Moſcardo. p*. 179. 217. From *Whitton-Cliff, Lincolnſhire*. It has Linear Striæ running along the Back all parallel to the Volutæ.

d. 15*. Two Nautiloides, or Bodies form'd in Shells of the Nautilus, compoſed partly of a blackiſh Stone, and partly of a white Spar. There are, towards the end of the firſt Voluta, Lines reſembling Sutures, not very unlike thoſe of ſome of the Ammonitæ. *Iſle of Man*, ſent by Dr. *Wilſon* Lord Biſhop of that Iſland.

d. 15†. Another, leſs, being only the interior or central Part of a Body of the ſame Species with the preceding: and found along with them. In this the Lines reſembling Sutures are very viſible throughout the whole Stone.

d. 16. A Stone form'd in the Cavity of a Nautilus, with bifurcated Ridges croſs the back. In the Stone-pit ¼ of a Mile North-Weſt of *Morton, Lincolnſhire.*

d. 17. & 18. Two others leſs, with ſome degree of tranſparency, being compos'd of a brown Spar. Theſe are of the ſame ſort with the foregoing. What the natural Bulk of theſe are, 'tis not eaſy to determine, none of them being intire. *Kings-Weſton, Glouceſterſhire.*

d. 19. & 20. Two more of the ſame ſort, but larger. Dug up two Miles from the Sea, near *Weymouth.*

d. 21. & 22. Two Stones caſt in Nautili having a double Row of Studs on each ſide. From *Toceſter-fields. Northamptonſhire.* Mr. *Morton,* who ſent me one of theſe, has deſcribed this, but wrongly, among the Ammonitæ. *Nat. Hiſt. Northamptonſhire, p.* 227. *Tab.* 9. *Fig.* 10.

d. 23. A ſmall Nautilus of a compreſt Figure. From *Folkſton-Cliff,* near *Dover.*

CLASSIS II.

PARS I.

SECTIO II.

Figura compreſſa, voluta utrinque conſpicua: ſeu AMMONITÆ.

Errores quorundam Scriptorum circa Ammonitas.

Cornu Ammonis ex mera terra argillacea conſtitutum, Statuit. Joh. Reiskius, *Miſcell. cur. Germ.* 1688.

Teſtam eſſe fatetur Rob. Hook: *ſed ex Nautilorum Genere Microg.* p. - - - - -

ARTICULUS I.

Ammonitæ læves: hoc eſt ſine ſtrigis per latera tranſverſis.

d. 24. A ſmall Ammonita with the Volutæ ſmooth and plain, from - - - - - Mr. *Morton.*

d. 25. From Rocks of a blue Slate near *Watchet* in *Somerſetſhire.* Mr. *Cole.* This ſeems to be flatted by ſome external Force, and is plainly compos'd of a pearly Shell; much reſembling that of the *Nautilus Græcorum* in Texture and Appearance. Mr. *Hutchinſon* in the Searches he made by my direction, in the year 1706, obſerved incredible Numbers of theſe Shells, thus flatted, and extremely tender, in ſhivery Stone about *Pyrton* Paſſage, *Lime* and *Watchet.* All he ſaw were near of the ſame Size: and he imagines them to have been young, tender, and only of ſome few Months growth. Which is the more probable, becauſe ſome of the Ammonitæ, found in theſe Parts, that are at full Growth, are ſo vaſtly great. *Conf.* p. 79. *infra.*

d. 25 *. Found in a Marl-pit, at *Allhampton, Somerſetſhire.* This Shell is gloſs'd over with a braſs-like Armature.

d. 25 †. A ſmall Ammonites with the Sides ſmooth, and the Back ending in a ſharp ſerrated Ridge. Found in a Clay-pit at *Hannington* in *Wiltſhire.*

ARTICULUS II.

Ammonitæ lateribus Strigatis, dorſo lævi.

d. 26. & 27. Two Ammonitæ found on the Shores of *Whitton, Lincolnſhire.* They were beat out of the neighbouring Cliffs with ſeveral other Bodies, by the Wearing of the Sea. They are well preſerv'd; the Shells being pretty ſound and entire. One of the Shells is fill'd mainly with Spar, the other with Stone.

d. 28. & 29. *Togs-hill, Glouceſterſhire,* between *Bath* and *Briſtol.*

d. 30. This has ſome Remains of the Shell. From *Wick* and *Abſom, Glouceſterſhire.*

d. 31. This was found on the Shores of *Whitton, Lincolnſhire:* and ſeems to be of the ſame Species with *d.* 26. & 27. as alſo does the following.

d. 32. From the Shores of the River *Humber,* near *Whitton, Lincolnſhire.*

d. 33. Found in a Quarry, the moſt famous in *England,* for Limeſtone; it being very hard, and making excellent Lime, at *Barrow* in *Leiceſterſhire.*

d. 34. A Maſs of grey Stone, with ſeveral Ammonitæ in it, ſeeming to be of the ſame Species with *d.* 26. There are alſo ſome other ſmall Shells in the Stone. From the Shores of *Whitton, Lincolnſhire.*

d. 35. & 36. Two Pieces of Stone having in them Ammonitæ, appearing to be of the ſame with *d.* 26, &c. *Minſter-Lovel, Oxfordſhire.*

ARTICULUS III

Ammonitæ porcis ſeu Strigis dorſum trajicientibus.

DIVISIO I.

Strigis Simplicibus.

d. 37. Found in ſinking a Well at *Great Bowden, Leiceſterſhire.* Sent me by Mr. *Bland.*

d. 38. Two Impreſſions of an Ammonita in Stone. Found on the ſide of a high Hill about 2 Miles Weſt of *Stokeſley, Yorkſhire.*

d. 39, 40, 41, 42. 42*. Ammonitæ found in a Marl-pit, in vaſt Numbers, from the depth of 3 Yards to 18 Yards, at *All-hampton* 3 Miles from *Brewton* in *Somerſetſhire.*

*d.*43. The Edges of this very perfect and beautiful Shell, are ſurrounded with a Pyritæ. 'Twas found on the Shores near *Hartlepool* in the Biſhoprick of *Durham.*

*d.*44. A Maſs of Stone, from *Whitton* in *Lincolnſhire*, with Fragments of Pectines in it, and two Ammonitæ. The bigger of them ſeems to be of the ſame ſort with *d.* 26. but larger: the other of the ſame ſort with *d.*46. & 47. *infra.*

*d.*45. Found in the Cliff near the *Spaw* at *Scarborough*, *Yorkſhire.*

*d.*46. & 47. From the Shores of *Whitton*, *Lincolnſhire.*

*d.*47*. Found on the Shores of *Humber*, near *Hull.*

ARTICULUS III.

DIVISIO II.

Porcis ſeu Strigis bifurcatis.

d. 48. The Ridges in this are very much rais'd and ſharp: and the Shell appears very plainly in ſome parts. 'Twas found near *Gritworth*, *Northamptonſhire.* There adheres to it a ſmall Ammonites of the ſame ſort with that *d.* 58. *infra.*

*d.*49. & 50. Taken out of a Bed of Clay about 250 Foot deep, near *Weymouth.*

d. 50*. A Segment of a Cornu Ammonis with a conſiderable part of the Shell ſtill inveſting it. 'Tis of a lovely ſhining pearly Hue, rather finer than the Nautilus. Found in ſinking a Well at *Great-Milton*, *Oxfordſhire.* Mr. *Stoneſtreet.*

d. 51, 52, 53. Three vaſtly large Ammonitæ, dug up in the great Quarry at *Portland.* Theſe lay parallel to the Surface of the Stratum in which they were lodg'd; and about 50 Foot deep.

d. 51*. From *Whitby*, in *Yorkſhire.* Found in the Alum Stone, the Stratum of which is 30 Yards thick, and lies 28 Foot deep.

d. 52 x. Another out of the ſame Alum Stone.

d. 52*. Another from the ſame Place (*Whitby*). This has the Diaphragm at the end of the laſt Voluta.

d. 52 ⋇. Another found in *Mcreworth-Park*, 7 Miles from *Maidſtone* in *Kent.* Dr. *Hatley.*

d. 52 †. An Impreſſion of another in an Alum Stone, found on the Shores near *Whitby*, *Yorkſhire.*

*d.*53*. A Maſs of Alum Stone, with ſeveral Ammonitæ in it, found upon the Shores near *Scarborough*, *Yorkſhire.*

d. 54. *Windruſh*, *Glouceſterſhire.*

d. 55. Found in a Gravel-pit near *Wellham*, *Leiceſterſhire.* Mr. *Bland.*

d. 56. *Paynſwick*, *Glouceſterſhire.*

d. 57. Found on Plough'd Lands by *Woodſtock-Park*, *Oxfordſhire.*

d. 57*. Another from *Woodſton* in *Huntingdonſhire.*

d. 57 †. Another, very fair, compoſed of a bright ſhining Braſs-like Pyrites. It has the Diaphragm at the end of the laſt Voluta. Found in the Iſle of *Portland*. Mr. *Chr. Wren*.

d. 58. & 59. From ------ *Northamptonſhire*.

d. 60. From a Quarry ¼ of a Mile North-Weſt of *Clipſton, Northamptonſhire*.

d. 61. This is cover'd with a ſhining braſs-like Armature.

d. 62. Found, in a Brook, near *Oxford*.

d. 63. Found with the former.

d. 64. & 65. The back of theſe riſes into a ſharp Edge; but yet is croſs'd by the tranſverſe Ridges, and therefore may indifferently be placed either in this or in the next Article.

DIVISIO III.

Ammonitæ ſtrigis bifurcatis dorſum trajicientibus, umbilicati.

d. 66. This conſiſts of a brown Spar, but has part of the Shell upon it. From ----- Mr. *William Cole* of *Briſtol*.

d. 67. & 68. Two Pieces of Stone ſtruck forth of the Cavity of the Umbilici of Shells of the ſame ſort with the foregoing. They are of a cochleated Figure: as is the Cavity in which they were found. Mr. *Cole*.

d. 69. An Umbilicated Ammonites, with a double Order of Studs on each ſide. Found near *Standiſh, Glouceſterſhire*.

d. 70. From *Portland* Quarry.

ARTICULUS IV.

Limbo acuminato per totum dorſum ducto.

DIVISIO I.

Limbo inter duos Sulcos erecto.

d. 70*. A very large Ammonites. From *Portland* Quarry.

d. 71. 72, 73. & 74. Found in *Whitby* Alum-Mines, along with *d.* 51*, *&c.*

d. 74 x. Another, found on the Plough'd Lands upon the Hill on which *Glaſſenbury Tor* ſtands, *Somerſetſhire*.

d. 74 †. Another from the ſame Place. This is bent in ſuch manner that one of the Sutures was open'd by that means. It ſeems to have been ſo bent before the Stone had acquired its utmoſt hardneſs.

d. 74*. Found near *Keynſham, Somerſetſhire*. Vid. *Cambden*'s *Brit*. p. 73. & 82. *Edit.* 1695. This has Parts of the Shell ſtill remaining upon it.

d. 75. Found in a Cloſe on the North-ſide of *Sherborn, Glouceſterſhire*.

d. 76. A Segment of a pretty large Ammonites. *Standiſh, Glouceſterſhire*.

d. 77. A Segment with Sutures very fair and plain upon the Surface. *Sherborn North-Fields, Glouceſterſhire.*

d. 78. A ſmall Segment cover'd with the Shell. 'Tis of a Pearl Colour, like that of the common Sea-Nautilus. Dug up at the great Clay-pit at *Richmond, Surry.*

d. 79. & 80. Found by the River *Cherwell,* at St. *Clements* near *Oxford.*

d. 81. This Ammonites has a double Order of Studs on each ſide. In a Bed of Chalk by the Road near ------ about three Miles on this ſide of *Middle-Colinbourn, Berkſhire.*

d. 82. A large Segment of an Ammonites. Found on *Lanſdown,* near *Bath.*

DIVISIO II.

Dorſo acuminato abſque ſulcis ſecundum Dorſum ductis.

d. 83. Found in a Brook near *Brixworth, Northamptonſhire.*

d. 84. From *Oxendon.* Mr. *Morton.* The Dorſum of this terminates in an Edge which is very prettily crenated or notch'd, like the Edges of the Leaves of ſome Plants. He has ſince deſcrib'd this, *Nat. Hiſt. of Northamptonſhire.* p. 225. *Tab.* 9. *Fig.* 3.

d. 85. Stone-pit near *Crick.*

d. 86. From ------ in *Northamptonſhire.* Mr. *Morton.*

d. 86*. Another, leſs, very fair, with the Shell on, and the Diaphragm at the end of the laſt Voluta. Found in a Clay-pit, near *Hannington, Wiltſhire.*

d. 87. *Fairford, Glouceſterſhire.*

d. 87*. From *Byfield, Northamptonſhire.* Mr. *Morton.*

d. 88. Found in a Stone-pit near *Clipſton.* Mr. *Morton.*

d. 89. A Maſs of Stone with ſeveral of the ſame ſort of Ammonitæ. From the ſame Stone-pit.

d. 90. A Vitriolick Aluminous Pyrites with Ammonitæ in it. Found in a Bed of Alum-ſtone 30 Yards deep, at *Peak* near *Scarborough, Yorkſhire.* [This is ſince diſſolved, and periſh'd.]

d. 91. & 92. Found at *Allhampton,* in the ſame Pit with *d.* 39. *&c.*

d. 93. Found looſe on the very Top of *Suffield-Hill,* near *Hackneſs, Yorkſhire.* This is a vaſt Hill, and very high.

d. 94. Found looſe at the bottom of a Quarry near *Nunnington, Yorkſhire.*

ARTICULUS V.

Sulco unico per dorſum ducto.

d. 95. This *Ammonites* I found in the North-Field of *Sherborn, Glouceſterſhire.*

d. 95*. Another, little different, only the Strigæ are not ſo much raiſed; found in the Road near *Keynſham.* In this ſome of the Sutures open, but not ſo much as in *d.* 74†.

d. 95†. Part of the outermoſt *Voluta* of another; ſet, on each ſide the *Sulcus*, with a double Row of Spikes. *Folkſton-Cliff, Kent.*

APPENDIX.

Impreſſions and Fragments of Ammonitæ.

d. 96. An Impreſſion of an *Ammonites*, found near *Outhorn, Yorkſhire.*

d. 97. Another Impreſſion. *Over-Slaughter, Glouceſterſhire.*

d. 98. Another, very fine, found a quarter of a Mile North-Weſt of *Clipſton, Northamptonſhire.*

d. 99. Another, found in Mr. *Howard*'s Field, at *Marſton-Truſſell, Northamptonſhire.*

d. 100. This is a very fair Impreſſion of an *Ammonites* upon a Flint. From *Shugborow, Warwickſhire.*

d. 101. Part of an *Ammonites*, with ſeveral Shells adhering to it. From the Shores of *Humber*, near *Whitton, Lincolnſhire.*

d. 102. The Body of this Stone is worn, but part of the Shell plainly appears. From the ſame Shores.

d. 103 & 104. Two Pieces of *Ammonitæ*, with white Spar in their Cavities; but the Edges of both the *Volutæ* and *Diaphragms* of the Shells plainly appear; both of them from the ſame Shores with the precedent.

d. 105. A Fragment, ſhewing the Diaphragms. *Scarborough, Yorkſhire.*

d. 106. Another, inveſted with a pearly Shell, having the Sutures finely diſplay'd upon its Surface. From the Shores near *Whitton, Lincolnſhire.*

d. 107, 108, & 109. Three others, with the Sutures as fine, from the ſame Shores.

d. 110. Another. From *Slauſton, Leiceſterſhire.*

d. 111, 112, 113, & 113*. Four Pieces of *Ammonitæ*, parted at the Sutures. From *Folkſton-Cliff*, near *Dover*. Theſe ſhew the Sutures, and the Joints, in a manner very clear and plain.

d. 114. Another, in Stone. Found in a Clay-Pit by *Lambeth.*

d. 115. A Joint of an *Ammonites*. From the Cliff near *Whitton, Lincolnſhire.*

d. 116. Another, conſiſting of a brown Spar. From - - - - - - Mr. *Morton.*

d. 117. Another leſſer Joint. From a Gravel-Pit, near *Bedford.*

d. 118. Another, from a Stone-Pit, near *Desborough. Northamptonſhire.*

d. 119. From *Folkſton-Cliff*, near *Dover.*

d. 120. Three ſmall Joints. From a Stone-Pit on the Eaſt-ſide of *Kitsby, Northamptonſhire.*

d. 121. A Fragment, ſhewing the Diaphragms at each Extremity. Found near *Silverton, Devonſhire.*

CLASSIS II.

PARS II.

Turbinata quibus Oris Margo ductu continuo ad Columellam pertingit. Sc. Trochi, Cochleæ, Neritæ.

SECTIO I.

Turbinata quorum Volutæ exteriores in aciem quandam exſurgentes acuminantur: ſeu

TROCHI.

ARTICULUS I.

Trochi Forma compreſſiore.

e. 1, 2, 3, 4. Four *Trochi*, all of the ſame Species, dug up in the great Clay-Pit at *Richmond, Surrey.*

e. 4*. Three more of the ſame, join'd by a *Pyrites*. Out of the ſame Pit.

e. 5, 6, *&* 7. Three *Copperas Pyritæ*, caſt in Shells of the foregoing Species. From ſtill the ſame Clay-Pit.

e. 8 *&* 9. Two larger, and of another Species. From the ſame Pit.

e. 10 *&* 11. Two *Copperas Pyritæ*, form'd in Shells of the ſame ſort with the foregoing. From the ſame Place. [Diſſolv'd in Tract of Time, and periſh'd.]

e. 12. A brown Sparry Stone, moulded in a *Trochus*. Found in the Fields near *Paynſwick, Glouceſterſhire.*

ARTICULUS II.

Trochi Forma elatiore.

e. 13. A brown Stone, very fair, and finely caſt in a Species of *Trochus*. Found in a Stone-Pit near *Cirenceſter, Glouceſterſhire.*

e. 14. Another, form'd in a Shell of the ſame Species. Found in a Stone-Pit at *Eaſtington, Glouceſterſhire.*

e. 15. A turbinated Stone, larger, being at the Baſis 2 Inches $\frac{1}{2}$ in Diameter. Found near *Weymouth.*

e. 16. Another, ſomewhat leſs. Found in the North-Field of *Sherborn, Glouceſterſhire.*

e. 17. Another, larger than either of the precedent. Found above 100 Foot deep, in the Chalk-Pit at *Northfleet.*

e. 18. Another, very fair, 2 Inches in Diameter at the Baſis, and 1 Inch $\frac{3}{10}$ in Perpendicular. Found in a Quarry in *Randcomb-Park, Glouceſterſhire.*

e. 19. Another, little different, found on the plough'd Lands in *Laſſington-Fields*, near *Glouceſter.*

e. 19*. Another. Found in a Quarry near *Keynſham* in *Somerſetſhire*.

e 20. A larger, found in a Stone-Pit on *Shot-over-Hill*, near *Oxford*.

e. 21. The Shell of a *Trochus*, fill'd with Stone, and having ſome arenaceous Matter adhering to the Outſide of it. 'Tis 1 Inch $\frac{8}{10}$ in diameter: and about 1 Inch in perpendicular. Found in the Cliffs near *Whitton*, *Lincolnſhire*.

e. 22. Another larger, from the ſame Cliffs.

e. 23. Another ſtill larger, found near *Glouceſter*.

e. 23*. A *Trochites*, very fair. Found near *Tame*, in *Oxfordſhire*.

e. 24. A ſmall Stone, form'd in a *Trochus*, about an Inch and $\frac{1}{4}$ in diameter, and $\frac{8}{10}$ of an Inch in perpendicular. Found in a Stone-Pit, near *Tetbury*, *Glouceſterſhire*.

e. 25. Another, of near the ſame Bulk, having yet part of the Shell upon it. From *Whitton-Cliffs*, *Lincolnſhire*.

e. 26. A ſmall *Trochus*, ſtruck out of a Piece of Stone, in the Wall of the great Park at *Sherborn*, *Glouceſterſhire*.

e. 27. Another ſmaller, [A] being not bigger than a common Pea; found in Stone, about 20 Foot deep, in the Home-Quarry, *Sherborn*, *Glouceſterſhire*. This Species is at this Day found living in our Seas; and is figured by Dr. *Liſter* under the Title of *Trochus pyramidalis, variegatus, Limbo anguſto in ſummo quoq; Orbe circumditus*. *Hiſt. Conchyl. l*. 4. *ſ*. 8. *n*. 1.

e. 27*. Two larger. *Southampton*.

e. 27†. A *Trochus*, with the Clavicle much depreſs'd, and a concave Baſis, out of Stone, raiſed near *Stifford*, in *Eſſex*.

SECTIO II.

COCHLEÆ.

ARTICULUS I.

Forma compreſſiore.

e. 28. A very hard, grey, turbinated Stone, 4 Inches in Baſe; and the *Volutæ*, where thickeſt, near an Inch and a half thick. Found in the South-Fields of *Sherborn*, *Glouceſterſhire*.

e. 29. Another, ſomewhat leſs, of a brown Colour. There adhere to the upper part of this many Granules of a Stoney Matter, that in Tract of Time had affix'd upon it as it lay expos'd to Rain, *&c*. on the Surface of the Earth, after the Shell, in which 'twas moulded, was beat off and gone; which frequently befalls all ſorts of form'd Stones that lie ſo expoſed amongſt a fine arenaceous, or a looſe ſparry Matter. This was found in a Cloſe of Sir *Ralph Dutton*, on the North-ſide of *Sherborn*, *Glouceſterſhire*.

e. 30. A *Cochlites*, of the ſame ſort of Stone, but leſs, being not quite 2 Inches broad. Near *Durſley*, *Glouceſterſhire*.

e. 30*. From a Cliff, near *Spitton*, *Yorkſhire*. This has the Shell yet covering it.

e. 31. A Piece of a reddiſh Stone, exhibiting a Cochlea 1 Inch $\frac{1}{2}$ in Diameter, ſplit horizontally. By this means, the interior part of the Shell is ſhewn to be fill'd with Stone of the ſame ſort with that that environs it without. Found in a Stone-Pit near *Shipton,* beyond *Turk-Dean, Glouceſterſhire.*

e. 31^{x}. A *Cochlites,* about an Inch in Diameter. In the Fields near *Tewkesbury, Glouceſterſhire.*

e. 31*. Another, ſomewhat leſs. This is the moſt perfect, the Impreſſion or Mould of the Shell being the moſt exquiſitely taken off that ever I ſaw. 'Twas ſtruck out of the middle of the Maſs of a Stratum of Stone in *Portland* Quarry.

ARTICULUS II.

Cochleæ clavicula brevi.

e. 32. This ſmall Shell has Stripes of brown, very thick, running parallel with the *Volutæ.* 'Twas found in a Stone-Pit, near Sir *Ralph Dutton*'s Houſe, *Sherborn, Glouceſterſhire.*

e. 33, 34. Two more; [A] from *Harwich-Cliff.* They are *Engliſh.* Dr. *Liſter* entitles this Species *Nerita edentulus lævis*; though they ſeem rather to be *Cochleæ.*

e. 35. A Stone form'd in another of this kind. *Barrington, Glouceſterſhire.*

e. 36. Nine, [A] of different Growth and Size, but all of the ſame Species; from the Tyle Clay-Pit at *Richmond.* This ſeems to be the *Cochlea ſublivida ore fuſco ad Baſin cujuſq; orbis velut funiculus depingitur.* Liſteri Hiſt. Conchyl. N° 19.

e. 37. Two veruccated. *Clipſton-Quarry, Northamptonſhire.*

e. 37 †. Three, very ſmall, with *Striæ* parallel to the *Volutæ.* All found about *Sherborn, Glouceſterſhire.*

e. 38 & 39. *Harwich-Cliff.* This is found, though rarely living at this Day, on the Coaſt of *Guernſey.* 'Tis figur'd by Dr. *Liſter* under the Title of *Buccinum bilingue ſtriatum labio propatulo digitato.* Hiſt. Conchyl. L. 4. S. 12. N° 20.

e. 40, 41. *Stifford, Eſſex.*

e. 42. Spar, caſt in one of the ſame Species. From the ſame Place.

e. 42*. This ſeems [A] to be the *Cochlea rufeſcens, faſciis maculatis,* of Dr. *Liſter. Hiſt. Animal. Angl.* p. 163. Tit. 9.

e. 43. A Copperas Pyrites. *Richmond Clay-Pit, Surrey.* [Periſhed.]

e. 44. *Southampton.*

e. 45, 46, 47, 48. Found in a Pit near *Stawell, Glouceſterſhire.*

e. 49. The Shell, wherein this *Cochlites* was form'd, being diſſolved before the Body was turned forth of the Stratum, is here ſucceeded by a grey Spar, that in Shape and Thickneſs reſembles the Shell, being caſt in the Cavity that the Shell before poſſeſs'd. *Sherborn, Glouceſterſhire.* Conf. Not. ad *e.* 54. infra.

e. 50, 51. Found in a Stone-Pit, near *Hartleborough*, *Northamptonſhire*.

e. 52. *Aulſworth*, *Glouceſterſhire*.

e. 53. *Garſington*, *Oxfordſhire*.

e. 54. *Lechlade*, *Glouceſterſhire*. This, like e. 49. *ſupra*, is cover'd with a ſparry Cruſt in lieu of the Shell; which having been diſſolv'd by Water, carrying vitriolick Salts, the ſame Water carrying alſo ſparry Particles, repoſited them in the place poſſeſs'd by the Shell ſo diſſolv'd and carry'd away; which place being of the Form and Dimenſions of the Shell, the Spar filling it, muſt of courſe be ſo too. When the Strata are, by ploughing, or other external Agents, broke up, the Bodies inclos'd in them are turn'd forth, whether cover'd with the real Shells, in which they were caſt, or with theſe factitious Cruſts, or with none, where the Water draining thro' the Maſs of the Strata, happens to have in it no ſparry Particles.

e. 55. *Cirenceſter*, *Glouceſterſhire*.

e. 56. *Broad-Riſington*, *Glouceſterſhire*.

e. 57. *Notgrave*, *Glouceſterſhire*.

e. 58. *Woodſtock*, *Oxfordſhire*.

e. 59, 60, 61, 62. All compreſs'd. Found in the great Quarry at *Barrington*, *Glouceſterſhire*.

ARTICULUS III.

Cochleæ Clavicula productiore.

e. 62*. Four, dug up in a Marl-pit at *Hanton*, by the River *Medway*, in *Kent*. Sent by Dr. *Halley*, who formerly publiſh'd an Account of the Bodies dug up in this Pit. *Philoſ. Tranſ.* N° 155. p. 463.

e. 63. Two, found in a Brook near *Lubenham*, *Leiceſterſhire*.

e. 64. Found near *Eynſham-Ferrey*, *Oxfordſhire*.

e. 65. *Whitton-Cliffs*.

e. 65*. This has Strigæ, thick ſet with Tubercles, running parallel to the Volutæ of the Shell. Found in a Quarry near *Cowlin-Deans*, *Glouceſterſhire*.

e. 66. Stone-pit, near *Stawell*, *Glouceſterſhire*.

e. 67. Clay-pit, at *Richmond*, *Surrey*.

e. 68. Found in the great Quarry at *Barrington*, *Glouceſterſhire*. Graved by Dr. *Liſter*, *Append. ad Hiſt. Conchyl.* L. 4. *de Buccinitis*, T. 1038. N° 15.

e. 69. Four, *Stifford*, *Eſſex*.

e. 70. From the Shores near *Whitton*.

e. 70*. Six, very ſmall. All found about *Sherborn*, *Glouceſterſhire*.

e. 71. *Aulſworth*, *Glouceſterſhire*.

e. 72. *Windruſh*, *Glouceſterſhire*.

e. 73. *Coln-Deans*, *Glouceſterſhire*.

e. 74. From the great Sand-pit, near *Woolwich*, *Kent*.

e. 74*. *Yanworth-Quarry*, *Glouceſterſhire*.

e. 75. [A] Four, out of a Marl-Pit, near *Wiggan, Lancaſhire.* This Species is found living, at this day, on our Coaſts; and is figured by Dr. *Liſter* under the Title of *Cochlea alba denſè ſtriata orbis primi ſuperiore parte paulo depreſſiore.* Hiſt. Conchyl. L. 4. Sect. 5. N° 57.

e. 76. Four vitriolick Pyrites. *Sheppey-Iſland, Kent.* [3 of theſe periſhed.]

e. 77. Eight, ſpirally ſtudded. They lay about 12 Foot deep in a blue Clay, among ſeveral other ſorts of Shells, in the great Sand-Pit at the Weſt-end of *Woolwich.*

e. 78. Found on the plough'd Lands near *Turk-Dean, Glouceſterſhire.*

e. 79. *Winchcomb-Fields, Glouceſterſhire.*

e. 80. Out of a Stone-Pit on *Cowley-Common,* near *Oxford.*

e. 81. Out of a Stone-Pit on *Shot-over-Hill,* near *Oxford.*

SECTIO III.

Apertura oblonga, clavicula intus recondita. CONCHA VENERIS.

e. 82. A ſmall one, [A] found in the great Clay-pit at *Richmond, Surrey*; appearing to be the ſame with Dr. *Liſter's Concha Venerea exigua alba Cylindracea.* N° 70. Hiſt. Conchyl.

e. 83, 84. Two large ones, from *Southampton,* ſeeming to be form'd in Dr. *Liſter's Concha Veneris major leviter & denſè ſtriata.* N° 71. Hiſt. Conchyl.

CLASSIS II. PARS III.

Turbinata ſinu [ex quo Lingua exoritur] ad Columellam donata.

SECTIO I. ARTIC. I.

Apertura oblonga Figura Pyramidali. RHOMBI.

e. 85. Two very ſmall *Rhombi.* From - - - *Northamptonſhire.*

e. 86, 87. Two others, [A] larger, very fair; one of 'em with the native Colour. Mr. *Jackſon.* Vid. c. 29. *ſupra.* This Species is common in our *Weſt-India* Iſlands; and I have ſeen of the ſame found upon the Coaſts of *Yorkſhire,* near *Whitby.*

ARTIC. II.

Figura Cylindroide. CYLINDRI.

e. 88. Six ſmall Cylinders. Found with the precedent.

e. 88^{x}. Two others. From - - - - in *Northamptonſhire.*

e. 88*. Two larger. *Norleach, Glouceſterſhire.*

SECTIO II.
Apertura ſubrotunda: BUCCINA.

ARTIC. I.
Sinu ad Columellam non roſtrato.

DIVISIO I.
Clavicula breviore.

e. 89. From *Southampton.*

e. 90, 91, 92, 93, 94, 95, 96, 97, 98. All found in the great Tile Clay-Pit at *Richmond, Surrey.*

e. 99, 100. *Stifford, Eſſex.*

e. 101. *Richmond Clay-Pit, Surrey.*

e. 102. *Ibidem.*

e. 103. White, ſmooth. Found with *e.* 87 *&* 88.

DIVISIO II.
Clavicula productiore.

e. 104. Two, ſmall. Found with the precedent.

e. 105. [A] The *Buccinum brevi roſtro cancellatum denſè ſinuoſum, labro dentato,* of Dr. *Liſter,* N° 21. *Hiſt. Conchyl.* From *Harwich-Cliff.*

e. 106. A ſmall one, [A] of the ſame Species. From the ſame Cliff.

e. 107. [A] The *Buccinum brevi roſtro, magnum, tenue, leviter ſtriatum.* Liſt. Hiſt. Conch. N° 15. Found, with other Shells, about a foot deep in Sand, 2 Miles from the Sea, in the Marſhes near *Croft, Lincolnſhire.* They are common on the *Engliſh* Shores.

e. 108. A Stone, ſeeming to be form'd in a Shell of the ſame kind with the foregoing. *Portland-Quarry.*

e. 108*. [A] From *Harwich-Cliff.* Buccinum brevi roſtro album, &c. N° 19. *Liſt. Hiſt. Conch.* Found commonly among Rocks, on the Shores round *England.*

e. 109. Taken out of a Stratum of Limeſtone, in a Quarry on the top of a high Hill by *Thornton,* 2 Miles from *Pickering, Yorkſhire.* There appear great number of Ova of Fiſhes in the Stone.

e. 110. *Richmond Clay-Pit, Surrey.*

e. 111. Two *Buccina. Ibid.*

e. 112. Five others, ſeeming to be of the ſame Species. *Woolwich,* out of the ſame Pit with thoſe *e.* 77. There were of the ſame Species dug up, along with ſeveral Bivalves, near *Bromley* in *Kent.*

e. 113. Eight long turbinated Stones, ſeeming to be form'd in like Shells with *e.* 112. In vaſt Strata of Stone in *Portland-Quarry,* at 15 Foot depth.

e. 113*. One larger, from the ſame Quarry.

e. 114. Found with *e.* 86.

SECTIONIS II. ARTICULUS II.

Buccina Roſtrata.

e. 115. Out of *Harwich-Cliff.*

[A] *e.* 116. *Buccinum roſtratum gracilius.* Liſt. Hiſt. Conch. N° 5. From *Harwich-Cliff.* This Species is found ſometimes in the Sea on the Coaſts of *Yorkſhire.*

e. 117. From the ſame Cliff.

e. 118. From the Cliffs of *Sheppey-Iſland, Kent.* Turbinated Pyrites.

e. 119. Another turbinated Pyrites, *ibid.* [Diſſolv'd and periſh'd.]

e. 120. Another, *ibid.* [Diſſolv'd and periſh'd.]

e. 121. Another. *Richmond Clay-Pit, Surrey.* [Diſſolv'd and periſh'd.]

e. 122. Five *Buccina.* Out of the ſame Clay-Pit.

e. 123. Two turbinated Pyrites, ſeeming to be form'd in like Shells with the precedent. *Sheppey-Iſland.* [Periſh'd.]

e. 124. Four *Buccina,* with the *Clavicula* longer than the precedent. From *Richmond Clay-Pit.*

e. 124*. Two others of the ſame Species. Found, with ſeveral others, about 40 Foot deep, in ſinking a Well by Sir *Bart. Shore*'s Houſe on *Pinner-Hill;* which is conſiderably higher than *Harrow-on-the-Hill,* as was found by an actual Survey. They lie at about 4 Miles diſtance. I ſaw ſeveral turbinated Shells of different kinds that were found along with theſe.

e. 125. Four Pyritæ, from *Sheppey-Iſland,* ſeeming to be form'd in Shells of the ſame Species with thoſe *e.* 124, & *e.* 124*.

e. 126. One ſeeming to be of the ſame ſort, but compreſs'd. *Richmond Clay-Pit, Surrey.*

e. 127. A *Buccinum.* Ibid.

e. 128. Seven, of another Species. *Ibid.*

e. 129. Three turbinated Pyrites, ſeeming to be form'd in Shells of the ſame Species. *Sheppey Cliffs.*

e. 130. Buccinum. *Richmond Clay-Pit, Surrey.*

e. 131. Another. *Ibid.*

e. 132, 133, 134, 135, 136, 137. Six *Buccina,* much reſembling the *Buccinum roſtratum majus, craſſum, &c.* Liſt. Hiſt. Conch. N° 4. but that the Twirl in this is different from that of the others; this being an *Heteroſtropha,* the Twirls turning from the Right-hand to the left. From *Harwich-Cliff.*

SECTIO III.

Buccina Bilinguia.

e. 138, 139. *Buccinum* [A] *bilingue Striatum labro propatulo digitato.* Liſt. Hiſt. Conch. N° 20. *Stifford, Eſſex.* This is ſometimes found on the *Engliſh* Shores. *Aldrovandus Muſ.* p. 844. N° 1. has one of this Species, or very like it.

SECTIO IV.

Purpura, ſive Buccina roſtro obliquo, tecta velut ex plicis quibuſdam compoſita.

e. 140, 141, 142. From *Richmond Clay-Pit, Surrey.*

APPENDIX.

e. 143, 144, 145, 146. From *Marcham* Stone-Pits, within two Miles of *Abingdon.*

CLASSIS III.

Conchylia Bivalvia.

PARS I.

Aurita.

SECTIO I.

Sinu ad Cardinem trigono in utraq; teſta, ſeu PECTINES.

ARTIC. I.

Ambitu ad Margines ſubrotundo.

DIVISIO I.

Superficie lævi, vel ſaltem Striis minutis admodum & vix conſpicuis inſcripta.

f. 1. *Crick* Stone-Pit, *Northamptonſhire.* Mr. *Morton.*
f. 2. Found, in plough'd Lands, near *Stunsfield, Oxfordſhire.*

DIVISIO II.

Striata Striis Circularibus.

f. 3. Found near *Weymouth.*
f. 4. Near *Oxford.*
f. 5. *Riſington-parva, Glouceſterſhire.*
f. 6. *Ibid.*

DIVISIO III.

Striis à Cardine ad Marginem ductis.

f. 7. *Fairford, Glouceſterſhire.*
f. 8. Near *Glouceſter.*
f. 9.
f. 10. *Lechlade, Glouceſterſhire.*
f. 11. *Sherborn, Glouceſterſhire.*
f. 12. *Ibid.*
f. 13. *Fairford, Glouceſterſhire.*

f. 14. Two. *Farmington, Glouceſterſhire.*

f. 15. Chalk-Pit, at *Northfleet, Kent.*

f. 16. Chalk-Pit, at *Greenwich, Kent.*

f. 17. *Northleach, Glouceſterſhire.*

f. 18. Found amongſt Gravel, near *Henley* upon *Thames.*

f. 19. *Coln-Rogers, Glouceſterſhire.*

f. 20. *Stowell, Glouceſterſhire.*

DIVISIO IV.

Superficie ſulcata.

f. 21. Near *Cheltenham, Glouceſterſhire.*

f. 22. *Little-Riſington, Glouceſterſhire.*

f. 23. *King's-Weſton, Glouceſterſhire.*

f. 24, 25. Found in the Banks of the River *Welland, Northamptonſhire.*

f. 25^{x}. Found looſe on the Side of a pretty high Hill near *Stokeſly, Yorkſhire.*

f. 25*. *Bowden-parva, Northamptonſhire.* Mr. *Morton.*

f. 26. In a Stone-Pit on *Cowley-Common,* near *Oxford.*

f. 27. *Ibid.*

f. 28. Near *Graveſend, Kent.*

f. 29. From a Gravel-Pit, near *Greenhythe, Kent.*

f. 30. *Woodſtock-Park, Oxfordſhire.*

f. 31. Found, on plough'd Lands, near *Eynſham-Ferry, Oxfordſhire.*

f. 32.

f. 33. *Shot-over-Hill,* near *Oxford.*

f. 34. Stone-Pit, *Cowley-Common,* near *Oxford.* I obſerved of the ſame Species by the *Oxford* Road, about five Miles ſhort of *Glouceſter.*

f. 35. *Ibid.*

f. 36. *Hanworth Glouceſterſhire.*

f. 36^{x}. Another of the ſame Species, but leſs. *Sherborn, Glouceſterſhire.*

f. 36*. *Lechlade, Glouceſterſhire.*

f. 37. *Crick* Stone-Pit, *Northamptonſhire.* Mr. *Morton.*

f. 37*. A ſmall Pecten, [A] very fair. *Harwich-Cliffs.* This is an *Engliſh* Shell, and the ſame with that figur'd by Dr. *Liſter, Hiſt. Conchyl.* Lib. 3. N° 27 & 28. with this Title; *Pecten mediocris latus, ex rufo variegatus, circiter viginti Striis tenuiter admodum ſtriatis diſtinctus.*

f. 38. *Hilderskill-Quarry, Yorkſhire.*

f. 39. Gravel-Pit, near *Iſlington, Middleſex.*

f. 40. Near *Sherborn, Glouceſterſhire.*

f. 41. Sir *Ralph Dutton*'s Home-Quarry, *Sherborn, Glouceſterſhire.*

f. 42. Out of a Quarry in *Northleach-Fields, Glouceſterſhire.*

f. 43. Out of the ſame Quarry.

f. 44, 45, 46, 47, 48, 49, 50. *Cowley-Common*, near *Oxford*, in a Stone-Pit.

f. 51. Found in a Quarry on the top of a high Hill near *Thornton*, *Yorkſhire*.

f. 52. Near *Gritworth*, *Northamptonſhire*.

f. 52*. An Impreſſion of a Pecten, very fair, upon a yellowiſh Flint. Found near *Walthamſtow*.

f. 53. Impreſſion on a grey Flint. Found on *Oak-of-Honour-Hill*, beyond *Peckham*, *Surrey*.

f. 54. *Trumpington-Fields*, near *Cambridge*.

f. 55. *Banſtead-Downs*, *Surrey*.

f. 56. Near *Rygate*, *Surrey*, in a Chalk-pit.

f. 56*. Chalk-Pit, *Lullingſton-Park*, *Kent*. This is perfect and very fair.

f. 57. Chalk-pit, near *Croydon*, *Surrey*.

f. 58. Chalk-pit, by *Greenhith*, *Kent*.

f. 59. Full of Flint. Chalk-pit at *Northfleet*, *Kent*.

f. 60. *Ibid.*

f. 61. Chalk-pit at *Greenhith*, *Kent*.

f. 62. Chalk-pit, *Purfleet*, *Eſſex*.

f. 63. Chalk-pit, *Northfleet*, *Kent*.

f. 64. Chalk-pit, near *Charlton*, *Kent*.

f. 65. Chalk-pit, near *Greenwich*, *Kent*.

f. 66, 67. Chalk-pit, near *Northfleet*.

f. 67*. A common black Flint, form'd in a Shell of the ſame Species with the foregoing, with parts of the Shell adhering to it, very fair. *Boxley-Hill*, *Kent*.

f. 68. Part of this Shell being broken off, ſhews the common black Flint caſt in it as in a Mould. There's a Maſs of like Flint concreted and form'd on the Outſide of this Shell likewiſe. 'Twas taken out of a Stratum of Chalk near 100 Foot deep in the great Chalk-pit at *Northfleet*, *Kent*.

f. 69. Out of the ſame Chalk-pit.

f. 70. Out of a Quarry near *Farmington*, *Glouceſterſhire*.

ARTICULUS II.

Pectines, Marginis ambitu verſus unam partem longius producto.

f. 71, 72, 73, 74, 75, 76, 77. From the Cliffs of *Whitton*, *Lincolnſhire*.

f. 78. Found near *Scarborough* Spaw.

f. 79. *Shot-over-Hill*, near *Oxford*.

f. 80. *Ibid.*

f. 81. *Ibid.*

f. 81*. Two, of the ſame Species with the preceding. *Woodſton*, *Huntingtonſhire*.

f. 82. *Broadwell-Grove*, *Oxfordſhire*.

f. 83. *Hampnet-Quarry*, *Glouceſterſhire*.

f. 84. Out of Gravel near *Chelſea-College*.

f. 85. Cliffs of *Humber*, near *Whitton*, *Lincolnſhire*.

f. 86, 87. Out of a Quarry near *Sherborn*, *Glouceſterſhire*.

f. 88. *Aulſworth*, *Glouceſterſhire*.

f. 88^{x}. *Stawell-Fields, Glouceſterſhire.*

f. 88*. *Farmington-Grove, Glouceſterſhire.*

f. 89. Near *Oxford.*

f. 90. *Barrington, Glouceſterſhire.*

f. 91. *Coln-Deans, Glouceſterſhire.*

f. 92. *Ibid.*

f. 93. *Turk-Dean, Glouceſterſhire.*

f. 94. *Randcomb, Glouceſterſhire.*

f. 95. *Moreton, Glouceſterſhire.*

f. 96. *Witney, Oxfordſhire.*

f. 97. A Pecten, with the Ridges fewer, and placed at greater diſtance than is uſual in this kind. Found in the Road between *Kettering* and *Rothwell, Northamptonſhire.*

f. 97*. Another, of the ſame Species, found near *Aſhley, Northamptonſhire.* Mr. *Sawyer.*

ARTICULUS III.

Pectines Figura anguſta à cardine ad Marginem oblonga.

f. 98, 99, 100, 101. Found on the plough'd Lands near *Coln-Dean, Glouceſterſhire.*

f. 102. *Broadwell-Grove, Oxfordſhire.*

f. 103. *Tangley, Oxfordſhire.*

f. 104, 105. *Scarborough, Yorkſhire.*

f. 105*. Found by the Road near *Pickering, Yorkſhire.*

f. 106. A grey Stone, form'd in a Shell of an uncertain kind, but ſeeming to have been a Pecten. It was found in a Quarry near the River *Medway,* on this ſide *Maidſtone, Kent.*

SECTIO II.

Conchylia aurita Cardine dentato, ſeu SPHONDYLI.

f. 107, 108. Found in a Stone-pit near *Thorp-Malſor, Northamptonſhire*; and are pretty common in the Pits of that Field. This ſeems to be of the ſame Species with a *Sphondylus,* commonly found in the *Weſt-Indian* Seas.

f. 109. From the Cliffs near *Whitton, Lincolnſhire.*

f. 110. *Burford, Oxfordſhire.*

SECTIO III.

Conchylia aurita Cardine lævi, ſeu Margaritiferæ.

f. 111. Found in a Stone-Pit, on *Cowley-Common,* near *Oxford.*

f. 112, 113. Two *Margaritiferæ,* of an oblong Shape, out of a Quarry near *Farmington,* in *Glouceſterſhire.*

f. 113^{x}. Another, leſs, of the ſame Species. From the great Quarry at *Barrington, Glouceſterſhire.*

f. 113*. Two more, of a Shape more round. From *Windruſh* Quarry, *Glouceſterſhire.*

CLASSIS III. PARS II.

Bivalvia non aurita teſtis imparibus.

SECTIO I.

Altera teſta plana.

ARTIC. I.

Figura lata patula, roſtro brevi vel nullo, OSTREA.

DIVISIO I.

Oſtrea labris non crenatis.

f. 114. A Pair [A] dug out of a little Hill near *Hedley*, in *Surrey*. This, and the following to *f.* 125*. are all of the ſame Species with the common Oyſter.

f. 115, 116. *Ibid.* [A]

f. 116*. A Pair, [A] taken out of a Stratum of a ſandy Marl, ſuch as is betwixt the Valves of the Shell. Near *Reading, Berkſhire*. There were, in the ſame Stratum, great Numbers more of theſe Shells.

f. 117, 118, 119, 120. Found [A] about 10 Foot deep in a Bed of Marl, lying over the Sand, in the great Sand-pit at the farther End of *Woolwich, Kent*. There were here, beſides Oyſters, Conchæ, Buccina, and other Shells, all of the very ſame ſorts with thoſe found in the great Sand-pit at the hither End of *Woolwich:* as alſo elſewhere on *Black-Heath*, and about *Stifford*, in *Eſſex*. The Stratum wherein they lie, is generally ſix or eight Foot thick: and the Shells in it are ſo numerous, and lie ſo cloſe, that the Maſs is almoſt wholly compoſed of Shells, there being only a very little Marl interpos'd. The Shells, in the Stone of *Stifford*, lie almoſt as thick in it.

f. 121. *Widrington-Fields* [A] near *Randcomb, Glouceſterſhire.*

f. 122. Stone-pit, [A] ¼ of a Mile North-Weſt of *Morton-Line.*

f. 122*. [A] This has ſeveral fair *Vermiculi Marini*, and a ſmall Oyſter adhering to it. Out of the great Quarry at *Barrington, Glouceſterſhire.*

f. 123. Stone-pit, [A] near *Oxford. Oſtracites,* a Stone form'd betwixt the two Valves of an Oyſter-Shell, one of them being ſtruck off.

f. 124. Another *Oſtracites*; both Shells being gone. Found near the precedent.

f. 125. Fields [A] near *Quainton, Bucks.*

f. 125*. *Richmond* [A] Clay-pit, *Surrey.*

f. 126. On the plough'd Lands on the top of a Hill, by *Wheatland*'s Mill, beyond *Northleach, Glouceſterſhire.*

f. 127. From *Thingdon* Stone-pit, *Northamptonſhire.*

f. 128. Three Pair, and three ſingle Shells. Found in the Brook and Fields about *Marſton-Truſſel, Northamptonſhire*

f. 129. Cliffs of *Humber*, near *Whitton.*

f. 130, 131, 132, 133, 134, 135. *Ibid.* Theſe have all Marks upon them, by which they appear to have ſtuck to Shells, Stones, Shrubs, or other Bodies.

f. 136. Ibid.

f. 137. Found near *Sherif-Hutton, Yorkſhire.*

f. 138, 139. Theſe two Oyſters, when young affixing to an Ammonita, have taken Impreſſions from the Shell. Found in *Aſhley-Field, Northamptonſhire.* Mr. *Sawyer,* Rector of the Town.

f. 140. In a Gravel-pit, near *Barly, Cambridgeſhire.*

f. 141. A vaſt thick Shell found in a Bed of blue Clay, a Mile and half Eaſt from *Weymouth,* 50 Foot higher than the Sea.

f. 142. *Oxendon* Gravel-pit. Mr. *Morton.*

f. 143. On a Hill near *Eynſham-Ferry,* upon the plough'd Lands, *Oxfordſhire.*

f. 144. & 145. In the Fields near *Quainton, Buckinghamſhire.*

f. 146. Plough'd Lands, near *Eynſham-Ferry,* with *f.* 143.

f. 147. *Fullbrook, Oxfordſhire.*

f. 147 *. Found upon an Hill near *Stroud, Glouceſterſhire,* among ſeveral others of the ſame Species. There is on the *Cardo,* the Impreſſion of another Shell, to which this had affix'd during the Growth of it.

f. 148. *Minchinhampton, Glouceſterſhire.*

f. 149. Fields near *Gritworth, Northamptonſhire.* The concave Shell of this and of all the following to *f.* 166 incluſive, have Marks of their adheſion to other Bodies in like manner as is obſerv'd of various kinds of Shell-Fiſh, now living at Sea. They affix themſelves to Stones, and other ſolid Bodies, the better to ſecure themſelves againſt the Agitations of the Water of the Sea.

f. 150, 151, 152, 153. Found in the great Quarry near *Barrington* in *Glouceſterſhire.*

f. 154, 155. Near *Sherborn, Glouceſterſhire.* This is the Otites of Dr. *Plot.*

f. 156. Near *Sherborn, Glouceſterſhire.*

f. 157. Ibid.

f. 158. Ibid.

f. 159. *Tangley, Oxfordſhire.*

f. 160, 161. Stone-pit at the North End of the Town of *Thingdon, Northamptonſhire.*

f. 162, 163, 164, 165, 166. In a Stone-pit near the Mill at *Workton, Northamptonſhire.*

f. 167. In a Stone-pit near *Wheatland's-Mill,* beyond *North-Leach, Glouceſterſhire.*

f. 167 x. Another from the Vale of *Glouceſter.*

f. 168. *Heddington, Oxfordſhire.*

f. 169. *Richmond, Yorkſhire.* [Diſſolv'd and periſh'd.]

f. 170, 171. *Whitton* Cliff, *Lincolnſhire.*

DIVISIO II.

Oſtrea Marginibus dentatis Arborea dicta, quod Arboribus & Fruticibus in Littore Maris naſcentibus adhærere ſolent.

f. 172, 173, 174. In a Stone-pit $\frac{1}{4}$ of a Mile North-Weſt of *Morton, Lincolnſhire.*
f. 174*. Found in a Stone-pit near *Peterborough.*
f. 175. Three Shells. Found on Plough'd Lands near *Cirenceſter, Glouceſterſhire.*
f. 176. *Stow* on the *Wolds, Glouceſterſhire.*
f. 177. Grav'd by Dr. *Liſter de Conchitis,* Plate 446. N° 37.
f. 178. *Iſlip, Oxfordſhire.*
f. 179. From a Stone-pit in the Road between *Kettering,* and *Rothwell, Northamptonſhire.*
f. 180. In a Stone-pit near *Gritworth, Northamptonſhire.*

ARTICULUS II.

Figura anguſta Roſtro longo recurvo.

These are commonly call'd Conchæ rugoſæ *or* Crow-ſtones, *they are frequent in* Italy. Bonanni Obſ. Teſtac. p. 103. *Biſhop* Evans *of* Bangor, *gave me one from* Angliſea. *I have ſeen of them from* Leppington *in* Yorkſhire, *and the Fields near* Ailsbury.

f. 181. From the Shores near *Pyrton* Paſſage, on this ſide of the *Severn.*
f. 182. From *Ditchford, Worceſterſhire.*
f. 183. *Witney, Oxfordſhire.*
f. 184, 185, 186, 187. From the Vale of *Glouceſter.*
f. 188, 189. From the Cliffs at *Whitton, Lincolnſhire.*
f. 190. From the Banks of the River near *Bugthorp, Yorkſhire.*
f. 191. Out of a Brook near *Northleach, Glouceſterſhire.*
f. 192. *Shotover-Hill,* near *Oxford.*
f. 192 *. Found in a Quarry at *Tuerton* near *Bath.*
f. 193. *Morton, Glouceſterſhire.*
f. 194, 195. The Opercula, or flat Shells, from the Vale of *Glouceſter.*
f. 196. *Pyrton-Paſſage* over the River *Severn.*
f. 197. From the Cliffs near *Whitton, Lincolnſhire.*
f. 198. From *Bugthorp* River, found with *f.* 190. *Yorkſhire.*
f. 199. Plough'd Lands near *Painſwick, Glouceſterſhire.*

CLASSIS III.

PARTIS II.

SECTIO II.

Bivalvia non aurita, Teſtis imparibus, utraq; Teſta convexæ, Vertice roſtrato, ſeu ANOMIÆ.

Some of theſe which follow in this Catalogue, are grav'd by Dr. *Liſter*. APPEN. *ad Hiſt. Conchylior. l.* 3. *de Conchitis*. N° 13, 14, 15.

There are ſo great Numbers of theſe Shells found about *Sherborn* in *Glouceſterſhire*, where I was, at Sir *Ralph Dutton*'s Houſe, ſeveral Months, that I thought it endleſs to note all the Places. Thoſe therefore, in this Section, that have not the Places noted, were all found about *Sherborn*, where they are call'd *Pundibs*: and lie as thick on the plough'd Lands, in ſome Fields about this Town, as I think I ever ſaw Pebles or Flints elſewhere.

The *Anomiæ læves* are alſo found near *Wickham* in *Kent*, *Biſſeter*, in *Caldy Iſland*, *Wales*, *Bridport*, *Dorſetſhire*, in great Numbers.

Conchæ Anomiæ in Helvetiæ Montibus repertæ, *J. Scheuchzer Specimen Lithogr. Helvet.* p. 25. *Et in Italia. Fab. Columna de Purp.* c. 12.

ARTICULUS I.

Anomiæ læves.

DIVISIO I.

Anomiæ læves Margine imo in duos Angulos terminato.

f. 200. Found in ſinking a Well near *Farrington*, *Berkſhire*.

f. 200*. Two from *Woodſton*, *Huntingtonſhire*. Mr. *Morton*.

f. 201. Found in *Silverton* Quarry, *Devonſhire*.

f. 201 †. Of Spar, the Shell moſt of it ſtruck off.

f. 202, 203. From *Colverton* in *Leiceſterſhire*, on the Edge of *Rutlandſhire*.

f. 204, 205.

f. 206. Near *Farrington*, *Berkſhire*.

f. 207, 208.

f. 209. 210. Found in a ſmall Stone-pit near *Cranford*, *Northamptonſhire*.

f. 211. Found near *Oxendon*, *Northamptonſhire*. Mr. *Morton*.

f. 212. *f.* 213. *f.* 214.

f. 214‡. Found by the River *Avon*, *Wiltſhire*. Mr. *Stoneſtreet*, who ſays 'tis that which Mr. *Lhwyd* calls *Sacculus longiſſimus*. *Lythophylac.* p. 42. N° 872.

f. 214*. Fill'd with Spar, *Oxendon, Northamptonſhire.*

f. 214 x.

f. 215, 216. *Tog's-Hill*, between *Bath* and *Briſtol.*

f. 217.

Divisio II.

Anomiæ læves Margine ſubrotundo plano.

f. 218. Two from a Stone-pit near *Desborough, Northamptonſhire.*

f. 218*. *f.* 219. *f.* 220.

f. 221. In a Stone-pit near *Stawell, Glouceſterſhire.*

f. 222. *Withington* Fields near *Randcomb, Glouceſterſhire.*

f. 223. *Greenhith* Chalk-pit, *Kent.*

f. 223 *. Broke out of the ſame Stone with *f.* 403.

f. 224. *Oxendon.* Mr. *Morton.* It ſeems to be of the ſame Species, and found in the ſame Place with *f.* 218.

f. 225. In Sir *Ralph Dutton*'s Vineyard, at *Sherborn, Glouceſterſhire. Jan.* 13, $16\frac{89}{90}$. The firſt Foſſil Shell I ever found.

f. 226.

f. 227. In the Fields near *Wellingborough, Northamptonſhire.*

f. 228. A yellowiſh Flint, form'd in this Species, the Shell gone. Out of a Gravel-pit, near *Iſlington-Wells.*

f. 229.

f. 230. *Farrington, Somerſetſhire.*

f. 231. *f.* 232. *f.* 233.

f. 234. In a Stone-pit near *Stawell*, with *f.* 221.

f. 235. *f.* 236. *f.* 237. *f.* 238. *f.* 239. *f.* 240.

f. 241. Twenty ſmall ones, all found about *Sherborn, Glouceſterſhire.*

f. 241 *. Two, found in a Quarry, on the ſide of an high Hill, near *Silverton, Devonſhire.*

f. 241 †. Two, from the ſame Quarry.

Divisio III.

Anomiæ læves Margine ſinuato.

f. 242, 243, 244, 245, 246, 247. From the Stone-pits about *Crick, Northamptonſhire.* Theſe and the two following have only one Sinus. The others under this Membrum have all of 'em three.

f. 248. *f.* 249.

f. 250, 251, 252. *Withington* Fields near *Randcomb, Glouceſterſhire.*

f. 253. *f.* 254. *f.* 255.

f. 256. *Candlesby, Lincolnſhire.*

f. 257. Two adhering together from the Vale of *Glouceſter.*

f. 258. Two more, one infix'd into the other. Out of a Stone-pit near *Oxford.*

f. 259.

f. 260. *Grafton* Quarry, *Northamptonſhire.*

f. 261. *Greenwich* Chalk-pits, *Kent.*

f. 262. *Purfleet* Chalk-pits, *Eſſex.*

f. 263. Chalk-pit by *Croydon, Surrey.*

f. 264. Chalk-pits near *Deptford.*

f. 265. Chalk-pit at *Greenhith*; the Shell empty, *Kent.*

f. 265*. From a Chalk-pit near *Northfleet. Kent.*

f. 266. In Flint, from a Gravel-pit on *Hampſtead-Heath.*

f. 267. Fill'd with Flint, *Deptford* Chalk-pits.

f. 268. Chalk-pits, *Purfleet, Eſſex.*

f. 269. *Greenhith* Chalk-pit, *Kent.*

f. 270. *Northfleet* Chalk-pit, *Kent.*

f. 270*. Found in a Chalk-pit on *Boxley-Hill, Kent.*

f. 271. *Rygate* Chalk-pit, *Surrey.*

f. 272. *Charlton* Chalk-pit, *Kent.*

f. 273. Four ſmall, *Northfleet, Kent.*

f. 274. A ſingle Valve, Chalk-pit near *Greenwich, Kent.*

f. 275. Another, *Northfleet.*

f. 276. Another ſmall, *Greenhith.*

f. 277. A very large one, *Withington* Fields near *Randcomb, Glouceſterſhire.*

f. 278.

f. 279. From a Pit near *Stawell, Glouceſterſhire,* with *f.* 221, & 234.

f. 280. *f.* 281. *f.* 282.

f. 283. Compreſs'd and broken. Out of *Hampnet* Quarry, *Glouceſterſhire.*

f. 284. *Withington* Fields near *Randcomb, Glouceſterſhire.*

f. 285. *Grafton* Quarry, *Northamptonſhire.*

f. 285*. The Shell in this is gone, it being a Flint, blackiſh, with a Caſt of Green, form'd in a Shell. Found near *Edgeborough* in *Buckinghamſhire.*

f. 286. *f.* 287. *f.* 288.

f. 289, 290. *Randcomb Park, Glouceſterſhire.*

f. 291. *f.* 292. *f.* 293. *f.* 294. *f.* 295. *f.* 296. *f.* 297. *f.* 298. *f.* 299. *f.* 300. *f.* 301.

f. 301*. Found 35 Fathom deep in a Coal-pit near *Malls-Meaburn, Weſtmorland.*

f. 301†. Found in a Quarry on the ſide of an Hill near *Silverton, Devonſhire.*

DIVISIO IV.

Anomiæ læves Margine ſubrotundo crenato.

f. 302. *f.* 303.

f. 304, 305, 306, 307, 308, 309, 310, 311. From a Pit near *Stawell* in *Glouceſterſhire,* with *f.* 221, 234, & 279.

f. 312. *f.* 313. *f.* 314.

f. 315, 316, 317, 318, 319. Pit near *Stawell,* along with *f.* 304, *&c.* Theſe and the next, *viz. f.* 320. are not only crenated, but have *Sulci* coming a pretty way up the Body of the Shell;

tho' not ſo as to reach the *Cardo*, as they do in thoſe of the following Article.

f. 320. *Randcomb-Park.*

ARTICULUS II.

Anomiæ à Cardine ad Marginem ſtriatæ.

I have ſeen of theſe from *Bridport, Dorſetſhire. Caldy Iſland, Wales. Caſtle-Cary, Somerſetſhire.* Chalk-pits near *Guilford.*

f. 321. Three ſmall ones fill'd with the Pyrites. From the Cliffs of *Sheppey Iſland.* [Theſe are diſſolv'd, and periſh'd.] The Pyrites is very apt, in tract of Time, to fall to pieces: and, by that means, I have loſt ſome of the moſt elegant Bodies in this Collection.

f. 322. Another, from the ſame Cliffs, ſomewhat larger.

f. 323. Six from *Dudley* in *Staffordſhire.* I take one of theſe to be that grav'd by Dr. *Liſter.* APPEN. *ad lib.* 3. *Hiſt. Conchyl. de Conchitis.* N° 8.

f. 323 *. One of the Shells of this has a large Sinus: the other is prominent, and riſes as much. From the *Iſle of Man.* Dr. *Wilſon* Lord Biſhop of the Iſland.

f. 324, 325, 325 *. Sent by Dr. *Nicholſon,* Lord Biſhop of *Carliſle,* from *Cumberland.*

f. 326. Chalk-pit, near *Rygate* in *Surrey.*

f. 327, 327 *, 328. *Greenhith* Chalk-pit, *Kent.*

f. 329. Ibid.

f. 329. *. Two from the great Chalk-pit near *Northfleet, Kent.*

ARTICULUS III.

Anomiæ à Cardine ad Marginem ſulcatæ.

DIVISIO I.

Labiis in eodem Plano commiſſis.

f. 330. Conſiſting chiefly of a white Spar, moſt of the Shell being ſhiver'd off, and gone. *Heddington, Oxfordſhire.*

f. 331. Three. *Burford, Oxfordſhire.*

f. 332. Three. *Woodſtock, Oxfordſhire.*

f. 333. Found in the River *Colne* near *Compton in the Hole. Glouceſterſhire.*

f. 334. Impreſſion in a grey Stone. Stone-pit near *Stawell, Glouceſterſhire.*

f. 335. Impreſſion in a dusky green Flint. In the Road near *Pancridge.*

f. 336. Impreſſion in a grey Flint. *Sydenham* Common near the Wells.

f. 337. Impreſſion with the Shell. *Harrow* on the *Hill, Middleſex.*

f. 337 *a.* A convex Impreſſion, in a flinty Peble, ***Camberwell,*** *Surrey.*

f. 337 *b.* A concave Impreſſion, very ſmall, plough'd Lands near *Oxford.*

f. 337 *c.* Another larger, Gravel-pit, St. *George's-Fields, Southwark.*

f. 337 *d.* Another Impreſſion of a Shell ſtill larger, in an Agate, found in a Gravel-pit a little beyond *High-gate, Middleſex.*

f. 338. Six ſmall ones. *Woodſtock, Oxfordſhire.*

DIVISIO II.

Margine aliquantulum ſinuato.

f. 339. Eight ſmall ones. Found about *Northleach, Glouceſterſhire.*

f. 340. Four, *Northfleet* Chalk-pits.

f. 341. Four. From *Withington* Fields near *Randcomb, Glouceſterſhire.* That Body in *Aldrov. Muſ.* p. 878. Nº 3. ſeems to be of this ſort. He ranks it very erroneouſly amongſt the Aſtroitæ: as indeed he does *Echinitæ, Cornua Ammonis,* &c.

f. 342. Two, *Burford, Oxfordſhire.*

f. 343. A convex Impreſſion on a grey Flint. Top of *Shooter's Hill, Kent.*

f. 344. Concave Impreſſion in a flinty Peble, *Kentiſh-Town, Middleſex.*

f. 345. A Shell in a flinty Peble, brown and grey, *Stoke-Newington, Middleſex.*

f. 346. A Piece of a flinty Peble, grey with a Caſt of yellow. The whole Stone was large; but ſhatter'd to Pieces in breaking. There is lodg'd in it a ſmall Concha Anomia, broken on one part, and having its inſide thick ſet with ſmall cryſtalline Shoots, or Sparks. Found near *Stratford, Eſſex.* The three Agate Mocho Plates, in the firſt part of the Catalogue of the Foſſils of *England, viz.* thoſe that are Native. Nº *e.* 21. *q. r. ſ. p.* ----- were cut off this Stone from the Shell thus lodg'd in it: it appears that this kind of Mocho Agates was diſſolv'd, at the Deluge, as well as the reſt, and as Flints, and other Nodules.

f. 347. *Gritworth, Northamptonſhire.*

f. 348. *Sudbury, Glouceſterſhire.*

f. 349. *Sherborn, Glouceſterſhire.*

f. 350. *Badmington, Glouceſterſhire.*

f. 351. *Barrington, Glouceſterſhire.*

f. 351 ^{x}. Found about 30 Foot deep in a Stratum of Stone, near *Silverton, Devonſhire.*

f. 352. *Sherborn, Glouceſterſhire.*

DIVISIO III.

Margine magis ſinuato.

f. 353. *Hedington, Oxfordſhire.*

f. 354. *Durſey, Glouceſterſhire.*

f. 355. *Sherborn, Glouceſterſhire.*

f. 356. *Ibidem.*

f. 357. *Witney, Oxfordſhire.*

f. 358. *Sherborn, Glouceſterſhire.*

f. 359. *Bold Aſton, Glouceſterſhire.*

f. 360. *Berkley, Glouceſterſhire.*

f. 361. *Sherborn, Glouceſterſhire.*

f. 362. Fill'd with Spar, *ibid.*

f. 363. Another broken, ſo as to ſhew the Conſtitution of the Spar, *Sherborn, Glouceſterſhire.*

f. 364. *King's-Weſton, Glouceſterſhire.*

f. 365. *Sherborn, Glouceſterſhire.*

f. 366, 367, 368. *Tog's-Hill*, between *Bath* and *Briſtol.*

f. 368 x. *King's-Weſton, Glouceſterſhire.*

f. 369, 370. Two compreſt from *Tog's-Hill.*

f. 371. Very large, *Withington* Fields near *Randcomb, Glouceſterſhire.*

f. 371 x. Found near *Badminton, Glouceſterſhire.*

f. 372, 373, 374, 375, 376, 377. From *Colderton*, in *Leiceſterſhire*, on the Edge of *Rutlandſhire.*

f. 378. Found on the Eaſt ſide of *Downham Gills, Yorkſhire.* There were many more of the ſame.

f. 379. *Dudley, Staffordſhire.*

f. 380. Foreſt of *Dean, Glouceſterſhire.*

f. 381. Found in the Stone-pit, at *Brick* in *Northamptonſhire.*

f. 382. Two, the one infix'd into the other. From the ſame Stone-pits.

f. 383. *Sherborn, Glouceſterſhire.*

f. 384. *Purfleet* Chalk-pit, *Eſſex.* Mr. *Doody.*

f. 385. *Walſal, Staffordſhire.*

f. 386, 387, 388, 389. Theſe have no Roſtrum, but were found in Shells of the ſame Species with the precedent. Found near *Farrington, Somerſetſhire.*

SECTIO III.

Bivalvia incerti Generis ſed quæ Anomiis Fab. Columnæ accedere videntur.

ARTICULUS I.

Figura à Cardine ad Marginem oblonga, Roſtro adunco.

f. 390. Found in a Clay-pit near *Lambeth.*

f. 391. Out of the ſame Clay-pit.

f. 392, 393, 394, 395. From the Cliffs at *Folkſton*, near *Dover.* Theſe are here found in great Numbers: and are of the ſame Species with the preceding.

f. 396. Impreſſion of a like Body, upon a Flint. Found in a Gravel-pit on *Hamſtead-Heath.*

f. 396^x. Digg'd up in a Pit of Clay, uſed for making Tyles, in *Childrens-Field*, in the Pariſh of *Thurnham*, 3 Miles from *Maidſtone* in *Kent*. Dr. *Hatley*. There were ſeveral others of the ſame Species.

ARTICULUS II.

Figurâ à Latere ad Latus oblongâ, Roſtro brevi.

f. 397. A very large one grav'd by Dr. *Liſter*, *de Conchitis*, Plate 465. Taken out of a Lead-Mine, near *Workſworth*, in the *Peak*.

f. 398, 399. Out of a Stratum of Stone, in another Mine at *Workſworth*.

f. 400. Another. Mr. *Morton*, from - - - - - - - - -.

f. 400^x. *Muſculo Mathioli accedens.* This ought to be rank'd among the *Polyleptoginglymi Forma oblonga*. *Dudley*, *Staffordſhire.*

f. 401. Out of a Lead-Mine on *Richmond-Moor*, *Yorkſhire.*

f. 402. Out of a Lead-Mine, belonging to Mr. *Bathurſt* in *Arkendale*, *Richmondſhire*. It lay in a Stratum 90 Foot deep.

f. 403. *Dudley*, *Staffordſhire.*

f. 403^x. *Cumberland.* Biſhop *Nicholſon.*

f. 403*. *Iſle of Man.* Biſhop *Wilſon.*

f. 403†. *Cumberland.* Mr. *Fitz Roberts.*

f. 404. This was taken out of a Stratum of 63 Yards deep, at the bottom of one of Mr. *Bathurſt*'s Mines in *Arkendale*, *Richmondſhire*.

f. 405. Found in the River near *Threpland*, *Weſtmorland.*

f. 406, 407. Two, on one the concave, on the other the convex Impreſſion. Mr. *Southwell*. *King's-Weſton*, *Glouceſterſhire.*

f. 408. Found 30 Yards deep at *Arkendale*, in the ſame Stratum with *f.* 402. *ſupra*,

f. 408^x. Found among many others, in a Stratum of ſlatey Stone, at the Brow of a vaſt Precipice, on the top of *Windedg*, a very high Hill in *Arkendale*, *Yorkſhire*. This part, where theſe are found, is perhaps the higheſt Ground in *England*, and the moſt raiſed above the Surface of the Sea. It lies near the mid-way betwixt the Eaſt and Weſt Sea: and ſome few Miles diſtant, in another Ridge of Hills, about the ſame Height with this, there ariſe Streams that paſs into thoſe two oppoſite Seas.

f. 409. *Cumberland.* Biſhop *Nicholſon.*

f. 410. Mr. *Southwell*, *King's-Weſton*, *Glouceſterſhire.*

f. 411. *Dudly*, *Staffordſhire.*

f. 411^x. From the *Iſle of Man.* Biſhop *Wilſon.*

f. 412. *Minſter*, in the *Peak.*

f. 413. Lead-Mine near *Workſworth* in the *Peak.* Figur'd by Dr. *Liſter*, *de Conchitis*, Plate 464, *n.* 25.

f. 413x. *Iſle of Man.* Biſhop *Wilſon.*

f. 413 *. A Shell of the ſame Species, and in like Stone, from the Iſle of *Angleſey*. Dr. *Evans*, Lord Biſhop of *Bangor*.

f. 414. From Colonel *Byerly's* Lead-Mines, 2 Miles from *Richmond*, in *Yorkſhire*.

f. 415. [Diſſolv'd, and periſhed.]

f. 416. Biſhop *Nicholſon, Cumberland.*

f. 417. Biſhop *Nicholſon, Cumberland.*

CLASSIS III. PARS III.

Bivalvia non Aurita, Teſtis paribus.

SECTIO I.

Ad Cardinem commiſſuram Dentibus multis minutis donata, ſeu LEPTOPOLYGINGLYMI.

ARTICULUS I.

Figura ſubrotunda.

[A] *f.* 418, 419. Given me by Mr. *Jackſon*, vid. *c.* 29. *ſupra.* This Species of Shell-fiſh, is pretty commonly found upon our own Shores. One of theſe ſtill retains the natural Colour, and both of them are very perfect and fair. All to *f.* 425 incluſive, ſeem to be of the ſame Species.

f. 420, 421, 422. *Harwich-Cliff.*

f. 423. Found in a Gravel-pit, on the North ſide of *Shooters-Hill, Kent.*

f. 424, 425. Found in ſinking a Well, at *Brompton, Kent.*

ARTICULUS II.

Figura oblonga.

f. 426. *Shotover-Hill*, near *Oxford.*

f. 427. *Barrington, Glouceſterſhire.*

f. 428. On the top of an Hill near *Wheatlands-Mill,* beyond *Northleach, Glouceſterſhire.*

f. 429. *Auleſworth, Glouceſterſhire.* This and the two following ſeem to be the ſame Species which is figur'd by Dr. *Liſter,* among the Muſcles, N° 207. of his *Hiſt. Conchyl.* and which is at this day found in the Seas of *Jamaica.* There is alſo an *Engliſh* Shell amongſt the *Pect. Polyleptoginglymi,* N° 69. not much unlike it.

f. 430, 431. Mr. *Jackſon,* vid. c. 29. *ſupra.*

f. 431 ※. *Pectunculus exiguus albus admodum tenuiter ſtriatus. Liſt. Hiſt. Conchyl. L.* 3. N° 69. 'Tis found in the Weſtern Coaſts of *Dorſetſhire, Devonſhire,* &c. This was taken out of the Stone of a Quarry near *Sherborn, Glouceſterſhire.*

f. 431 x. Four ſmall Cuneiformes, and a Stone form'd in a Shell of the ſame ſort, from *Clipſton* Quarry, *Northamptonſhire.*

f. 431 *. Four, found in a blue Clay in digging the Canal at the Earl of *Montague*'s-Houſe at *Boughton, Northamptonſhire.*

f. 431 †. Another, of the ſame ſort, dug up in a Tile-Clay-pit in *Turnham* Pariſh, 3 Miles from *Maidſtone, Kent.*

f. 432. A Stone form'd between the 2 Shells of a Bivalve, which ſeems reducible to this kind. Found in the Quarries about *Quainton,* in *Buckinghamſhire.* Mr. *Stoneſtreet.*

SECTIO II.

Bivalvia teſtis paribus, paucis Dentibus majoribus ad Cardines donata.

ARTICULUS I.

Figura ſubrotunda, ſeu PECTUNCULI.

DIVISIO I.

Læves.

[A] *f.* 433. *Richmond* Clay-pit. This is the *Pectunculus Maximus ſubfuſcus valde gravis* of Dr. *Liſter* in his *Hiſt. Conch.* N° 108. In his Hiſt. *Animal. Angliæ,* he calls this *Concha, è maximis, admodum craſſa, rotunda, è nigro rufeſcens. Conf.* N° p. 79, *infra. Aldrovandus* found one of this Species in a Mountain near *Bononia,* in *Italy, Muſæum,* p. 465.

[A] *f.* 434. Another. *Ibid.* Lodg'd in a large Maſs of the *Ludus Helmontij.* 'Tis evident from this, that theſe *Ludi* are Nodules: and were form'd before the Subſidence at the Deluge. The whole of this is accommodated to the Shell: and a Cruſt of the yellow Matter of that ſort that the Partitions of this Body are compos'd of, immediately ſurrounds and inveſts the Shell on all ſides. The Shell is fill'd with a Pyrites. vid. *f.* 681. *infra,* that alſo being of this ſort, and thick ſet with Fragments of Shells in all parts.

[A] *f.* 435. Another, *ibid.*

[A] *f.* 436. Another with a Pyrites concreted upon it. *Ibid.*

[A] *f.* 437. Another, *ibid.*

[A] *f.* 438. Another, *ibid.*

[A] *f.* 439. Another leſs, *ibid.*

[A] *f.* 440. Another, *ibid.* The Shell of this being ſtruck off, ſhews a Pyrites molded in it.

[A] *f.* 441. Another ſtill leſs, *ibid.*

[A] *f.* 442. Another leſs yet, *ibid.*

[A] *f.* 442 x. Another, *ibid.* This is ſo ſmall, as not much to exceed a large Pea in bigneſs. There are great numbers of this Size, as alſo of Pyritæ of the ſame Size, and form'd in ſuch Shells, found in this Clay-pit.

[A] *f.* 442 *. Two Pyritæ, of the ſame Size and Shape with the precedent, and ſeeming to be form'd in the Shells. Theſe from the Cliffs of *Sheppey* Iſland.

f. 442 †. A Stone form'd in a Pectunculus ſomewhat more convex than that *f.* 433. otherwiſe little different from it. The Shell it ſelf being periſhed and gone, is ſucceeded by a ſparry Cruſt. When it ſo fell out that Shells were lodged in Stone that was lax and porous, ſo as to give Paſſage to Water, *that*, pervading the Stone and carrying with it Salts, Particles of Spar, or other Minerals, whoſe conſtituent parts are ſcabrous or angulated, by little and little frets, wears and carries off the parts of the Shell. And in tract of time, the Water continuing ſtill to paſs, depoſits, in the room of the Shell, Particles of ſuch ſparry or other mineral Matter as it happens to bear along with it, ſucceſſively, till it has fill'd the Cavity. Now the Matter being thus collected and caſt in the Place which the Shell took up, it muſt in courſe aſſume the very ſhape of that Shell. Which ſeems to be the whole of this Affair, that has much amuſed ſome People who have not thoroughly conſidered theſe things. This was taken out of a Stratum of Stone on *Gazington-Hill, Oxfordſhire.*

f. 442 ⁜. Another Stone, formed in a Shell of the ſame Species with the precedent. Out of a Quarry near *Quainton* in *Buckinghamſhire.*

f. 443. Found on the plough'd Lands on a Hill near *Wheatland's* Mill, beyond *Northleach, Glouceſterſhire.* This is one ſort of the *Bucardites.*

f. 444. Another of the *Bucardites. Badminton, Glouceſterſhire.*

f. 445. Another, leſs, *Stow* on the *Wolds, Glouceſterſhire.*

f. 446. [Diſſolv'd, and periſh'd.]

f. 447. *Harwich Cliff.*

f. 448. Another, of the ſame Species, in Stone; with Stone alſo moulded in it. From the ſame Cliff.

f. 449. Stone moulded in another of the ſame Species. From *Southampton.*

f. 449^{x}. A Pyrites moulded in another of the ſame Species. *Sheppey-Iſland, Kent.*

f. 450. Another Shell little different from *f.* 447. There is a Shell from the *Weſt-Indies*, very like this, yet not the ſame. This was found in the great Sand-pit near *Woolwich*: There are vaſt numbers of them, lying amongſt other Species, in Strata 10 or 12 Foot deep, for near ¼ of a Mile together. They are found among a great variety of other Shells, alſo in all the Sand-pits upon *Black-Heath*: in the Stone by the Road, betwixt *Stifford* and South *Okenden*: as alſo at *Orſett*, which lies about three Miles Eaſt of it.

f. 451. Another, *ibid.*

f. 452. Another, from the Sand-pit upon *Shooter's-hill.*

f. 453. A Pair, ſomewhat leſs, out of a Stratum of Stone near *Stifford, Eſſex.*

f. 453^{x}. Two ſingle Shells, of the ſame Species, and out of the ſame Stone with the foregoing.

f. 454. Another, *Sherborn, Glouceſterſhire.*

f. 455. Another, *Windruſh, Glouceſterſhire.*

f. 456. Another, Mr. *Jackſon. Conf. c.* 29. *ſupra.*

f. 457. From the great Chalk-pit near *North-ſtreet, Kent.*

f. 458. Found near *Pickering, Yorkſhire.*

f. 459. On the ploughed Lands, on the North-ſide of Sir *Ralph Dutton*'s new Park, at *Sherborn, Glouceſterſhire.*

f. 459^{x}. Found near *Pickering, Yorkſhire.* There were more of the ſame.

f. 460, 461. *Sherborn, Glouceſterſhire.*

f. 462. *Farmington, Glouceſterſhire.*

f. 463. On a Hill, near *Wheatland's Mill*, beyond *Norleach, Glouceſterſhire.*

f. 464. Out of the great Quarry, at *Barrington, Glouceſterſhire.*

f. 464^{x}. Found in the Fields near *Turk-Dean, Glouceſterſhire.*

f. 465. *Portland Quarry.*

f. 466. *Auleſworth, Glouceſterſhire.*

f. 467. *Widdrington-Fields, Glouceſterſhire.*

f. 468. *Cowley*, near *Oxford.*

f. 469. *Marſton, Northamptonſhire.* Dr. *Evans*, Lord Biſhop of *Bangor*, ſent me one of the ſame Species, found in the *Iſle of Angleſey.*

f. 470. *Widdrington*, near *Randcomb, Glouceſterſhire.*

f. 471. *Sherborn, Glouceſterſhire.*

f. 472. Found on the ſide of a pretty high Hill, two Miles Weſt of *Stokeſley, Yorkſhire.* Vid. *f.* 536.

f. 473. From Sir *Ralph Dutton*'s Home-Quarry, *Sherborn, Glouceſterſhire.*

f. 473^{x}. A ſmall one; from Sir *Ralph Dutton*'s Home-Park, *Sherborn.*

f. 474. Cliffs of *Sheppey-Iſland.*

f. 475, 476, 477, 478, 479. This Species of Shell is found in the Seas about *Jamaica*, and the adjacent Parts; and is called by Dr. *Liſter*, Hiſt. Conchyl. N° 138. *Pectunculus albus admodum craſſus ſinu ſive Sulco conſpicuus.* Theſe were given me by Mr. *Jackſon. Conf. c.* 29. *ſupra.*

DIVISIO II.

Pectunculi Faſciati.

f. 480. This is an *Engliſh* Shell, [A] but fretted and worn. 'Tis called by Dr. *Liſter*, in his *Hiſt. Conch. Pectunculus omnium craſſiſſimus, Faſciis ex latere bullatis donatus*, N° 122. Given me by Mr. *Jackſon. Conf. c.* 29. *ſupra.*

f. 481. *Barrington, Glouceſterſhire.*

f. 482, 483, 484, 485. In a Quarry near *Halſton, Northamptonſhire.*

f. 486. Four. *Richmond* Clay-pit, *Surrey.* The Shell of one of theſe is perforated with a ſmall round Hole, as if bored by the Tongue of the *Purpura.* See my Anſwer to *Camerar.* p. - - -

f. 487. Two Pyritæ, moulded in Shells of this Species; and found in the ſame Place.

f. 488. *Sherborn, Glouceſterſhire.*

f. 489. *Ibid.*

f. 489^x. Found in *Harwich-Cliff.* The *Faſciæ* in this are very ſmall and fine.

f. 490. *Windruſh, Glouceſterſhire.*

f. 491. Sir *Ralph Dutton*'s Kitchen-Garden. *Sherborn, Glouceſterſhire.*

f. 492. *Northleach, Glouceſterſhire.*

f. 493, 494. *Sherborn, Glouceſterſhire.*

f. 495, 496. *Sherborn, Glouceſterſhire.*

f. 497. *Oxendon, Northamptonſhire.*

DIVISIO III.

Pectunc. Fig. ſubrotunda, ſtriati à Cardine ad Marginem.

f. 498. *Richmond Clay-Pit, Surrey.*

f. 499. *Stifford, Eſſex.*

f. 500. *Ibid.* This lies upon a Shell of the ſame ſort with *f.* 453.

f. 501, 502. *Ibid.*

f. 503, 504. *Barrington, Glouceſterſhire.*

f. 505, 506. Pyritæ. *Sheppey.* [Diſſolved and periſhed.]

DIVISIO IV.

Pectunculi Fig. ſubrotunda à Cardine ad Marginem ſulcati.

f. 507. [A] This, and the following, to 519^x. were given me by Mr. *Jackſon. Conf. c.* 29. *ſupra.*

f. 508. *f.* 509. *f.* 510. *f.* 511. *f.* 512. *f.* 513.

f. 514. This [A] and the following, to *f.* 519. incluſive, are now found upon the Coaſts of *England*; and perhaps the ſeven foregoing may be of the ſame ſort. Theſe ſix are nearly of the ſame Size and Growth.

f. 515. *f.* 516. *f.* 517. *f.* 518. *f.* 519.

f. 519^x. A Piece of a large Cockle, but ſo broken, as to appear like an entire ſmall one.

f. 520. A ſmall one, from the Quarry near *Sherborn, Glouceſterſhire.*

f. 521. A Piece of a large Cockle; found in a Chalk-pit near *Rygate.* This is the *Pectunculus craſſus, maculatus ſtriis imbricatis conſpicuus.* Liſt. Hiſt. Conchyl. N° 160. which is at this time found on the Coaſts of the *Leeward-Iſlands* and *Jamaica.*

f. 522. An Impreſſion, found in ſinking a Well near *Marybone, Middleſex.*

f. 523. *Harwich-Cliff.*

f. 524, 525. *Ibid.*

f. 526, 527. [A] Theſe two lay a Foot deep in the Sand, two Miles from the Sea, in the Marſhes near *Croft, Lincolnſhire.*

Mr. *Morton*. This is our common Cockle. *Liſt. Hiſt. Conchyl.* N° 171.

f. 528. Another of the ſame; [A] found with ſeveral more 30 Foot deep, in digging to make a Sluice near *Boſton, Lincolnſhire.* They lay in a Bed of blue Clay. Mr. *Morton.*

f. 529. Another [A], in Stone; from the Cliffs, between *Skegneſs* and *Ingoldſmels, Lincolnſhire.*

f. 530. [A] *Southampton.*

f. 531. [A] An Impreſſion of a Cockle of the ſame ſort found with *f.* 424. at *Brompton,* in *Kent,* by Mr. *Emmet,* in ſinking a Well. There happening to have been a leſſer Cockle in the larger, the Stone exhibits an Impreſſion of this alſo.

DIVISIO V.

Pectunculi Figura ſubrotunda diverſimode ſtriati.

f. 532. The ſeveral Striæ of this are diſpoſed in ſuch manner, as to form acute Angles on the middle of the Back of the Body, all parting towards the Margin of it. *Weſtall,* near *Burford, Oxfordſhire.*

f. 532 x. An Impreſſion, made by a Pair of Bivalves of the ſame Species with the foregoing. The Shells were opened, and expanded when the Impreſſion was made. *Woodſton, Huntingtonſhire.*

ARTICULUS II.

Pectunculi Figura oblonga; quippe à cardine ad Marginem oppoſitum protenſi.

DIVISIO I.

Sulcis & ſtriis, à Cardine ad Marginem ductis.

f. 533. *Weymouth.* Found in a Corn-Field, about a Mile and half from the Sea.

f. 534. Out of a Stone-pit near the River *Medway,* betwixt *Maidſtone* and *Rocheſter, Kent.*

f. 535. Out of the ſame Stone-pit.

f. 536. Found on the ſide of a Hill near *Stokeſley, Yorkſhire,* with *f.* 472.

f. 537. *Broad-Riſington* Fields, *Glouceſterſhire.*

f. 538. *Burton* on the Water, *Glouceſterſhire.*

f. 539. *Stawell, Glouceſterſhire.*

f. 540. *Yanworth, Glouceſterſhire.*

DIVISIO II.

Sulcis ſtriiſq; diverſimode ductis, ex altera ſcilicet parte faſciatim diſpoſitis, ex altera vero à Cardine ad Marginem procurrentibus.

f. 540x. A Pair, very fair and entire, beat out of a Bed of Clay in a Cliff betwixt *Weymouth* and *Rodipole,* on the Eaſt-Side of a Gulph on the Shore there.

f. 540ª. From the ſame Place; where Nº 608. *infra,* are alſo found.

f. 540*. A Shell, of the ſame Species with the foregoing. Found near *Aldſworth, Glouceſterſhire.*

f. 540 †. Another, of the ſame Species, but much leſs. Found in a Quarry at *Hampnet, Glouceſterſhire.*

f. 540 ⁖. Another. From - - - *Northamptonſhire.* Mr. *Morton.*

ARTICULUS III.

Pectunculi forma fere triquetra, læves.

f. 541. *Tewkesbury, Glouceſterſhire.*

f. 542. From - - - - - *Yorkſhire.* Found on the top of a high Hill.

f. 543. *Werkton* Stone-pit, near the Mill, *Northamptonſhire.*

f. 544, 545. *Sherborn* North-Fields, *Glouceſterſhire.*

f. 546, 547. *Stawell, Glouceſterſhire.*

f. 548. *Northleach, Glouceſterſhire.*

f. 549. *Hampnet, Glouceſterſhire.*

ARTICULUS IV.

Bivalvis paribus teſtis, paucis ad Cardinem Dentibus Figura à Latere ad Latus oblonga.

DIVISIO I.

Altero Latere protenſo, altero brevi, ſeu Cunei.

SECT. I.

Superficie ſulcata, à Card. ad Marg.

f. 550, 551. Found on the plough'd Lands, on the ſide of a Hill, near the Road from *Sherborn* to *Burton* on the Water, *Glouceſterſhire.* There were great Numbers of theſe in this Place. I obſerved of the ſame ſort, and ſome of almoſt double this Size, in the Road near *Wansford, Northamptonſhire.*

f. 552, 553. Two leſs, found along with *f.* 550, 551.

f. 554. *Heddington, Oxfordſhire.*

f. 555. *Stow* on the *Wolds, Glouceſterſhire.*

f. 556. *Colnrogers, Glouceſterſhire.*

f. 557. *Farmington, Glouceſterſhire.*

f. 558. *Cheltenham, Glouceſterſhire.*

f. 559. A Stone, form'd in a *Cuneus,* with part of the Stone in which it was lodged. From *Abſom, Glouceſterſhire.*

f. 560. Found near the *Oxford* Road to *Glouceſter,* about 5 Miles from *Glouceſter.*

f. 561. *Northleach, Glouceſterſhire.*

f. 562. *Sherborn, Glouceſterſhire.*

f. 563. *Heddington, Oxfordſhire.*

f. 563ˣ. A Pair, ſmall, very finely ſtriated. Found in a Sand-Pit on the ſide of *Shooter's-Hill, Kent.*

SECT.

SECT. II.

Cunei ſuperficie lævi.

The Shells of ſeveral of the Bodies ranged in this Claſs, are periſhed and gone; and only the Stones formed in them remain. Theſe were formed by the *Inſides* of the Shells, which ſometimes are *ſmooth*, when the *Outſides* are *ſulcated*; ſo that no certain Judgment can be made, without the Shells in which they were form'd, whether theſe be claſs'd rightly or not.

f. 564. *Windruſh, Glouceſterſhire.*

f. 565. Found near *Great-Funtley, Hampſhire.*

f. 566. From *Cumberland.*

f. 567, 568, 569, 570, 571. [A] *Whitby* Allum-Mines, along with the *Ammonitæ, d.* 51 ˣ. Theſe are very like one ſort of our River-Muſcles.

f. 572, 573, 574, 575, 576, 577, 578. [A] Found in ſeveral places in the plough'd Fields about *Sherborn, Glouceſterſhire.* Theſe have no Remains of the Shells on them, but ſeem to be form'd in Shells of the ſame ſort with the foregoing from *Whitby.* There are of this Species found on *Yenſon-Hill,* in *Hinckſtridge* Pariſh, about 3 Miles from *Milburn, Somerſetſhire.*

f. 579. *Minſter-Lovel, Oxfordſhire.*

f. 580. *Riſington-Parva, Glouceſterſhire.*

f. 581. Found in the Road near *Pickering, Yorkſhire.* There's an Impreſſion of a Pecten on Stone adhering to it.

f. 582. Found in the ſame Road, near the former.

f. 583. Found looſe on the ſide of a pretty high Hill, 2 Miles Weſt of *Stokeſley, Yorkſhire.* There are Sparks of a *Mica* in it.

f. 584, 585. Two, ſmall, of a Pearl-Colour. *Stifford, Eſſex.*

f. 585ˣ. A Pyrites, form'd in a *Cuneus,* ſeeming to be of the ſame Species with that, *f.* 570. but much leſs, being probably form'd in the Shell of an Animal that was very young. Found, 60 Foot deep, in the great Clay-pit, *Richmond, Surrey.*

f. 586, 587, 588. Three Pairs. From the great Sand-pit on the Eaſt-Side of *Woolwich.* There are vaſt, and almoſt incredible Numbers of them here, as alſo of Oyſter-Shells, and ſome other Bivalves, lying in a Stratum of Loam that is about 10 Foot thick, and is immediately under the Turf. Indeed there are ſuch Multitudes of the Shells, eſpecially of this Species, that in moſt parts of the Stratum they lie as thick and cloſe as they poſſibly can, in Layers that are horizontal, parallel to each other, and to the great Stratum of Sand, that lies immediately underneath this Stratum of Loam and Shells. The whole has apparently the Face of a Sediment; and carries evident Marks of its having thus ſettled down out of a Fluid. There are of the ſame ſorts of Shells lying in like manner in a Stratum of Loam, above a vaſt Stratum of Sand of vaſt extent. At the Eaſt End of *Woolwich,* and in all parts of *Black-Heath, Kent* and *Eſſex.*

f. 589, 590, 591. Stones form'd in the ſame Shells, with part of the Shell ſtill adhering. From the great Sand-pit at the Eaſt-End of *Woolwich*.

f. 591^{x}. Another, from the ſame Place. This is manifeſtly bended.

f. 592. Found in the River *Coln*, at *Compton* in the Hole, four Miles from *Randcomb*, *Glouceſterſhire*.

f. 593. Found at *Moreland*, on the River Side, *Weſtmorland*.

f. 594. *Bugthorp*, upon plough'd Lands. [A] This, and the two following, ſeem to be the *Engliſh* Shell deſcrib'd by Dr. *Liſter*, in his *Hiſt. Conch.* N° 247. under this Name, *Tellina faſciata, ex rubro variegata*. This (*f.* 594.) ſeems to be the ſame with the *Chamalites oblongus Aldrov. Muſ.* L. 4. p. 836. N° 5.

f. 595. Near *Scarborough Spaw*, *Yorkſhire*.

f. 596. Found on the Shore of *Scarborough*, *Yorkſhire*.

f. 597. Found in a Brook, near *Lubenham*, *Leiceſterſhire*.

f. 598, 599, 600. From *Whitton-Cliffs*, *Lincolnſhire*. In theſe the Shell is gone, and ſucceeded by a ſparry Cruſt of like Figure and Dimenſions. That of *Aldrov. Muſ.* p. 837. N° 2. ſeems to be of this ſort. He calls it, *Chamites faſciatus*.

f. 601, 602, 603, 604, 605. *Ibid.*

f. 605^{x}. [A] Two, of that Species which Dr. *Liſter* has figur'd, *Hiſt. Conchyl.* L. 3. N° 267. under the Title of *Chamæ-Pholas anguſta, parva, ſinu utrinq; leviter muricato conſpicua*. Out of a Clay-pit on the top of *Shooter's-Hill*, *Kent*.

SECT. III.

Cunei ſuperficie faſciata.

f. 606, 607. From -------- in *Northamptonſhire*. There are likewiſe of theſe found along with *f.* 608. *infra*.

f. 608. Three Pair, and a ſingle Shell, very fair, and intire, with Studs ſet in a faſciated Order; *i. e.* in Rings incircling the Cardo. Found on the Shore of the Eaſt-Side of a ſmall Gulph betwixt *Weymouth* and *Rodipole*, being waſh'd out of a Bed of Clay in the adjacent Cliff.

f. 608^{x}. This is of the ſame Species; but the Shell is periſhed, and ſucceeded by a ſparry Cruſt of like Figure and Dimenſions. Found near *Bampton*, *Oxfordſhire*.

f. 608^{a}. This ſhews the Form of the Stone moulded in this kind of Shell. The Pores of the Shell appear to be ſaturated with Spar. Found with the foregoing.

f. 608^{b}. Part of a Valve of one of the ſame Shells, from the ſame Place; having in the Inſide of it two other Shells, of different kinds affix'd. By which it appears that the Fiſh had been for ſome time before dead, and gone.

f. 608^{c}. Part of another. This, and the former, ſerve to ſhew the Form and Conſtitution of the Cardo of this kind of Shell.

f. 609, 610. Two Stones ſeeming to be form'd in Shells of the ſame Species which thoſe *f.* 608. From a Quarry a quarter of a Mile North-Weſt of *Morton, Lincolnſhire.* Theſe are call'd *Hippocephaloides* by Dr. *Plot,* Nat. Hiſt. Oxfordſhire.

f. 611. Another Stone, of a Shape not ſo oblong as the preceding. *Portland-Quarry.* Of ſeveral Hundreds that I have ſeen of this ſort, from this Quarry, this is by much the faireſt. 'Tis indeed perfect and intire; and has upon it all the Lineaments of the Inſide of the Shell expreſs'd upon it with wonderful exactneſs.

f. 612. *Portland* Quarry.

f. 613. Another of the ſame kind, found on the top of an Hill on the Weſt ſide of *Bath.*

f. 614. Found in the Parſonage Garden at *Southrey, Norfolk.*

f. 615. to 618 incluſive, being fill'd with the Matter of the common Pyrites, are diſſolv'd and periſh'd.

f. 619. In the great Quarry at *Barrington, Glouceſterſhire.*

f. 620, 621. *Ibid.*

f. 622. *Stroud, Glouceſterſhire.*

f. 623. *Sherborn, Glouceſterſhire.*

f. 624. *Ibid.*

f. 625. *Farmington, Glouceſterſhire.*

f. 626. *Hampnet, Glouceſterſhire.*

f. 627. *Sherborn, Glouceſterſhire.*

DIVISIO II.

Quarum utrumq; Latus à Cardine in longum protenditur, ſeu TELLINÆ.

[A] *f.* 628, 629, 630, 631, 632, 633, 634. Found in ſeveral Places in the plough'd Lands about *Sherborn, Glouceſterſhire,* where they are very plentiful. The ſame Species are found in great numbers in a Stone-pit near *Moreton, Lincolnſhire.* Theſe are only Sand-ſtone, caſt in a Shell which very much reſembles one of our River Muſcles, which Dr. *Liſter* calls the *Muſculus anguſtus citrinus,* N° 3. *Hiſt. Conchyl.*

f. 635. One adhering to a Maſs of Stone, the exterior Shell is worn off, but the interior being fenced with Stone, is ſtill preſerv'd. *Cirenceſter, Glouceſterſhire.*

f. 636. *Charlton-Abbots, Glouceſterſhire.*

f. 637. *Stawell, Glouceſterſhire.*

f. 638, 639. *Sherborn, Glouceſterſhire.*

f. 640. *Burford, Oxfordſhire.*

f. 641. *Sherborn, Glouceſterſhire*

f. 642. *Hampnet, Glouceſterſhire.*

f. 643. *Northleach, Glouceſterſhire.*

f. 644. *Windruſh, Glouceſterſhire.*

f. 645. *Stifford, Eſſex.*

f. 646. *Ibid.*

f. 647. Found ſix Fathom deep in ſinking a Coal-pit, at *Orton* in *Cumberland*. Biſhop *Nicholſon*.

f. 648. Five from the Cliffs of *Sheppey* Iſland, *Kent*.

f. 649, 650, 651, 652. From the Cliffs by the Side of the *Humber* near *Whitton*, in *Lincolnſhire*. Theſe are nearly allied, if not of the ſame Species with *f.* 603. *ſupra*.

f. 653. *Tangley, Oxfordſhire.*

CLASSIS III. PARTIS III.

SECTIO III.

Bivalvia Teſtis paribus ad Cardinum commiſſuram non dentata.

ARTICULUS I.

Figura oblonga à Cardine ad imum Marginem, ſive Muſculi.

f. 654. Large Muſcle found in the Banks of the River *Welland*, near little *Bowden, Northamptonſhire.*

f. 655. *Iſlip, Oxfordſhire.*

f. 656. *Barrington, Glouceſterſhire.*

f. 657. *Burford, Oxfordſhire.*

f. 658. From a Stone-pit near the Mill at *Werkton, Northamptonſhire.*

f. 659. *Fullbrook, Oxfordſhire.*

f. 660, 661, 662, 663, 664. Found in the great Quarry at *Barrington, Glouceſterſhire.* They are blunter at the *Cardines* than ours, and ſeem to be a ſort of *Weſt-Indian* Muſcle. They are found in great numbers and lying very thick, which indeed appears from the following Maſs.

f. 665. Four of the ſame in a Maſs of Stone from the ſame Place.

f. 666. Found in a Bed of Clay in *Silphoe-Gills, Yorkſhire.*

f. 667. Stone-pit near *Moreton, Lincolnſhire.* Mr. *Morton.*

f. 668. The Valves of this are diſtanced by Infuſion of more ſtoney Matter than the Shells could contain. *Fullbrook, Oxfordſhire.*

f. 669. A ſhort thick Muſcle. This ſeems to be another ſort of *Weſt-Indian* Muſcle. *Stroud, Glouceſterſhire.*

[A] *f.* 670. This is a young Shell of our common *Engliſh* Sea-Muſcle. *Tangley, Oxfordſhire.*

[A] *f.* 671. Another ſtill leſs of the ſame, younger, and leſs. *Windruſh, Glouceſterſhire.*

f. 672. A ſmall one, of the ſame kind with *f.* 660, from ----- *Northamptonſhire.* Mr. *Morton.*

f. 672^{x}. Three ſmall Muſcles ſeeming to be of that Species that Dr. *Liſter* calls *Pholas Niger, Indiæ occidentalis. Hiſt. Conchyl. L.* 3. N° 268. Theſe were found near *Foſcot, Oxfordſhire.*

f. 673. A long ſlender Muſcle, from the Cliffs at *Whitton, Lincolnſhire.* This is the *Virginia* Muſcle. There was one of this Species in Mr. *Baniſter*'s Drawings.

f. 674. Found on the plough'd Lands, on a Hill near *Wheatlands-Mill*, beyond *Northleach, Glouceſterſhire.*

f. 675. *Hampnet* Fields, *Glouceſterſhire.*
f. 675^x. *Mytylus Pinniformis.* Out of the great Quarry at *Barrington*, *Glouceſterſhire.*

SECTIO IV.

Bivalvia Teſtis imparibus aliqua Parte ſemper hiantibus.

ARTICULUS I.

Figura longa, anguſta, ejuſdem ubiq; latitudinis, ſeu SOLENES.

[A] *f.* 676. A Piece of the *Engliſh Solen*, viz. *Solen major ſubfuſcus rectus. Liſt. Hiſt. Conchyl.* N° 255. Found near *Southampton.*

ARTICULUS II.

Figura oblonga Telliniformi, ſeu Chamæ.

f. 677, 678, 679. Near *Southampton.*

ARTICULUS III.

Figura oblonga à Cardine ad imum Marginem qua Parte hiant, ſeu Pinnæ.

f. 680. A Stone formed in a *Pinna.* From the great Quarry at *Barrington, Glouceſterſhire.*
f. 681. Part of a Pinna of a Pearl Colour, adhering to a Piece of the *Ludus Helmontij.* Clay-pit near *Richmond Wells, Surrey.* There are Fragments of other Shells that every where diſcover themſelves in breaking the Stone. *vid. f.* 434. *ſupra.*
f. 682, 683. *Ibid.*
f. 684. Taken out of the 3d Stratum of a Quarry on the top of a pretty high Hill near *Thornton*, by *Pickering* in *Yorkſhire.*
f. 685. *Burford, Oxfordſhire.*
f. 686. Out of a Stone-pit near *Irchester, Northamptonſhire.* Mr. *Morton* ſent me this: and has ſince deſcribed this in his *Nat. Hiſt.* of *Northamptonſhire.* p. 197. *Tab.* 3. *Fig.* 12.

CLASSIS IV.

Multivalvia.

SECTIO I.

Ex tribus teſtis conſtantia.

ARTICULUS I.

Fig. ad Chamas accedente cum Teſta tertia parva, valvis juxta Cardinem oppoſita, ſeu PHOLADES.

g. 1. [A] *Pholas latus rugoſus ex dimidio dorſo & aſper. Liſt. Hiſt. Conchyl.* N° 279. This was found in *Harwich Cliff.* The ſame Species of Shell-fiſh is at this day found living at Sea, on the Northern Coaſts of *England.*

g. 2. Another, of the ſame Species, but bigger. Chalk-pit, *Lullingſton Park, Kent.*

CLASSIS V.

ECHINI.

See the Catalogue of the exotic Foſſils, where this Diſtribution of the *Echini* is ſomewhat enlarged; by an Addition of a 2d Diviſion to ART. II. of SECT. II. of the *Spatagi*, and a whole Genus under the Name of *Pentaphylloides*.

PARS I.

Duobus in Teſta foraminibus, tuberculis exiguis & fere æqualibus in ſuperficie donati, ſeu SPATAGI.

SECTIO I.

Spatagi qui in uno latere ſulcum inſignem habent, Cordati aliquibus dicti.

ARTICULUS I.

Foraminibus verſus Latera poſitis, uno ſub fiſſura, altero in Latere oppoſito.

DIVISIO I.

Figura parum acuminata.

h. 1. From the great Chalk-pit near *Greenhithe, Kent.* It lay near 60 Foot deep.

h. 2. Chalk-pit, *Purfleet, Eſſex.*

h. 3. Chalk-pit, *Northfleet, Kent.*

h. 4. Chalk-pit near *Graveſend, Kent.*

h. 5. Chalk-pit, by *Greenwich.*

h. 6. Chalk-pit, near *Deptford.*

h. 6^{x}. This has on it a ſmall Pecten, the Shell of a long ſlender Vermiculus marinus, and the Baſes of ſeveral Balani. *Charlton, Kent.*

h. 7. A yellowiſh Flint moulded in a Shell of this Species. Gravel-pit near *Iſlington.*

h. 8. Another. Found in a Gravel-pit near *Mitcham, Surrey*, by *Charles Dubois.* The upper part of this has a Cavity in it with 5 Sinus's, ſo that the flinty Matter appears not to have reach'd to the top of the Shell [which in this Species is raiſed pretty high] wherein 'twas form'd, or to have taken an Impreſſion of it, as thoſe which are form'd in empty Shells have. This happen'd probably from the interpoſition of the Body of the Fiſh, not permitting the flinty Matter, entering, to approach that part of the Shell to which the Fiſh was annex'd. So that this Flint fell ſhort of filling the Cavity of the Shell by all that Space which the Body of the Fiſh poſſeſs'd; and therefore as the Baſis or lower part of the Stone has on it the Impreſſion of the Shell, and exhibits the Form of it; the upper exhibits the Form of the contiguous Parts of the Fiſh.

DIVISIO II.

Figura Compreſſiore.

h. 9. *Greenhithe, Kent.*
h. 10. *Charlton, Kent.*
h. 11. *Dartford, Kent.*
h. 12. *Croydon, Surrey.*
h. 13. *Rygate, Surrey.*
h. 14. *Graveſend, Kent.*
h. 15. *Deptford, Kent.*
h. 16. *Purfleet, Eſſex.*
h. 17. *Graveſend, Kent.*
h. 18. *Northfleet, Kent.*
h. 19. *Deptford.*
h. 20. *Ibid.*
h. 21. *Ibid.*
h. 22. *Purfleet, Eſſex.*
h. 23. *Greenwich, Kent.*

h. 23^{x}. *Northfleet, Kent.* This is the ſmalleſt I ever remember to have ſeen.

h. 24. This hath parts of the Shells of the common *Vermiculus marin.* the *Vermiculus Nautiloides* [A] of Dr. *Liſter Hiſt. Conch.* N° 5. a reticulated Film, found ſometimes upon Sea-Shells, and uſually ſuppoſed to be the Remains of the Veſicles of the Spat of ſome ſort of Shell-fiſh; beſides theſe, there are ſome Coralline Effloreſcencies upon it. *Netlebed, Oxfordſhire.*

h. 25. This hath parts of the Shell of a ſort of Oyſter ſticking to it in ſeveral places. From - - - - - in *Hertfordſhire.*

h. 26. This hath part of one of thoſe Shells, pretty big, upon it. *Croydon, Surrey.*

h. 27. *Purfleet, Eſſex.* This hath ſeveral of the *Vermiculi Nautiloides* of Dr. *Liſter. Hiſt. Conchyl.* ſticking to it. *vid. h.* 24. *ſupra.*

h. 27^{x}. *Graveſend.* This is compreſs'd, ſo as to part the Plates, and burſt open ſeveral of the Sutures. *vid. h.* 40. *infra.*

h. 28. A Shell cut in two, to ſhew the inſide of it. There adhere to the outſide, Spat, and the *Vermiculi Nautil.* vid. *h.* 24. *Northfleet, Kent.*

h. 29. Chalk caſt in the Shell of an Echinus, and ſhewing the Lineaments of the Shell very finely. *Fetcham,* near *Leatherhead, Surrey.*

h. 30. A Shell, from *Northfleet,* broken, ſhewing the Flint wherewith 'tis quite fill'd, in ſuch ſort as to demonſtrate 'twas as fine and thin as melted Metal, and is run in the Shell as in a Mould.

h. 31. Another immers'd in a black Flint: and broken ſo as to ſhew its Cavity fill'd with Flint. *Croydon, Surrey.*

h. 32. Another alſo fill'd with Flint, and having Flint adhering externally to it. This Shell is much compreſt, broken, and its parts diſplac'd. *Charlton, Kent.*

h. 33. An Echinites, form'd in the Shell of an Echinus Spatagus, of the Sort, and much of the Size of that *h.* 15. *ſupra.* very fair and perfect, having taken off all, even the fineſt Lineaments, of the Shell wherein it was caſt and moulded. The Flint within appears to have been continued thorough one of the natural Apertures of the Shell, in ſuch quantity as to have environ'd the Shell, and taken an Impreſſion of the outſide of it, with not leſs exactneſs. Betwixt the exterior and interior Flint is a Space, or Interval, equal to that of the Shell, that made theſe Impreſſions, which Shell in tract of time periſh'd, and is now quite diſappear'd. *Lullingſton-Park,* near *Ainsford, Kent.*

h. 34. A Stone form'd in the Shell of an Echinus Spatagus, and incloſed in a flinty Peble. The Shell ſeems not to have been entire; but where it was, there appears a Vacancy between the Echinite and Flint, anſwering to the dimenſions of the Shell. Found in a Gravel-pit near *Graveſend.*

h. 35. A Piece of the ſame flinty Peble, having on it the Impreſſion of part of the outſide of the Shell.

h. 36. Another Echinite adhering to a grey Flint, near *Henly,* 4 Miles from *Ipſwich, Suffolk.*

h. 37. Another adhering to a black Flint. *Oak of Honour Hill,* beyond *Peckham, Surrey.*

h. 38. Another, found upon *Banſtead Downs, Surrey.* There appears in this too an Interſtice, between the Echinites and the Flint, of the thickneſs of the Shell.

h. 39. An Impreſſion of part of the outſide of this Species of Echinus upon a greeniſh Flint. *Richmond-Park, Surrey.*

h. 40. An Echinite or Flint, form'd in an Echinus compreſs'd, crack'd and opening at the Sutures in ſeveral Places, found among the Gravel in the Street, near *Wadham Colledge, Oxford.* The Shell in which this was form'd, was in much the ſame Condition with that *h.* 27^{x}.

h. 40^{x}. Another alſo compreſs'd. Found on the Downs near *North Tudworth, Wiltſhire.*

h. 41. Another of a brown flinty Peble, the Impreſſion and Lineaments of the Shell appearing plain and diſtinct, and even the very Sutures of the Shell. Out of the great Gravel-pit on the Eaſt ſide of *Hyde-Park.*

h. 42. Another of a yellowiſh brown Flint. *Harrow on the Hill, Middleſex.*

h. 42^{x}. Another, of a grey Flint. Found in a Gravel-pit near *Greenwich.*

h. 43. Another of a dusky yellow Flint, very perfect and fair. Near *Iſlington-Wells.*

h. 43^{x}. Another. *Hitchin, Hertfordſhire.*

h. 44. Another. *Enford, Wiltſhire.*

h.45. Another. *Kenſington* Gravel-pits.

h. 46. Another. *Barkhampſtead.*

h.47. Another of a black Flint, very perfect and fair. *Boxhill,* in *Surrey.*

h.48. Another of a light grey Flint. *Henly* upon *Thames.*

h.49. Another, found in the Fields near *Eyton Bray,* in *Bedfordſhire.*

h.49$^{\mathrm{x}}$. Another, very ſmall, near *Highgate, Middleſex.*

h.49*. Another. *Newington, Surrey.*

h.49 †. Found on the Downs near *North-Tudworth, Wiltſhire.*

h.49 ·※· Parts of the Shell of an *Echinus Spatagus,* with Shoots of Cryſtal on the inſide, ſet in Rows, parallel to the Sutures of the Shell in a very regular and beautiful manner. Out of a Chalk-pit, on the Downs, near two Miles from *Croydon, Surrey.*

h.49 ‡. This is of a Species quite different from any of the precedent; it having the Sulcus at the end ſhallower: and the five oblong Depreſſions obſervable in thoſe, are wanting here, and the Shell ſmooth at top.. *Cherry-Hinton* Chalk-pit, near *Cambridge.*

ARTICULUS II.

Spatagi Cordiformes uno foramine in media fere baſi, altera in ipſa fiſſura poſito.

h.50. A ſmall yellow one. *Witney, Oxfordſhire.*

h.51, 52. Two of a grey Colour. *Barrington, Glouceſterſhire.*

h.53, 54. Two, yellow, from the Stone-pit upon *Cowley-Common,* near *Oxford.*

h.55. Found in the Fields near *Heddington,* by *Oxford.*

h.56. *Farmington, Glouceſterſhire.*

h.57. *Winchcomb, Glouceſterſhire.*

h.57$^{\mathrm{x}}$. *Biſſeter, Oxfordſhire.*

h.58. Plough'd Lands on the Edge of *Clarkendown,* near *Bath.*

h.59. *Windruſh, Glouceſterſhire.*

h. 60. A large flat Echinites. Found in a Stone-pit between *Earnham* and *Aſleby* in *Lincolnſhire.* Mr. *Morton.*

h. 61. Another, larger, of a brown Colour, not ſo flat as the preceding. Found in that part of *Tangley* Fields which is called *Tangley-bottom,* near *Burford* in *Oxfordſhire.* This is the *Brontia* or *Ombria* of Dr. *Plot. Nat. Hiſt.* of *Oxfordſhire,* p. 90. *Tab.* 2. *Fig.* 9, 10.

h. 61$^{\mathrm{x}}$. *Fullbrook-Field,* near *Burford, Oxfordſhire.*

h. 61 †. *Northleach-Field;* where they are found plentifully: as alſo in the adjacent Parts, of *Oxfordſhire* and *Glouceſterſhire,* for ſeveral Miles round, upon the plough'd Lands. This ſhews the Form of the inſide of the Shell, and the Matter 'twas fill'd with; amongſt which are great numbers of Ova of Fiſhes.

h.61 ‡. *Witney, Oxfordſhire.* I found the like at *Arlington,* near *Byberry, Glouceſterſhire.*

SECTIO II.

Spatagi nullo ſulco ad latera donati, utriſq; foraminibus in baſi Teſtæ.

ARTICULUS I.

Altero foramine in ipſo Baſis Margine, altero verſus oppoſitum marginem ſitis Galeati aliquibus dicti.

I have obſerved the Echini of this Claſs of all Sizes, from one Inch $\frac{1}{2}$ length in the Baſis to three Inches. There is ſomething of a Difference in the Shape of ſeveral of theſe; ſome being flatter on the top, others more coppled; but the Differences do not ſeem to be ſo great as to imply that they are of diſtinct Species. Some of them are fill'd with Chalk; others with Flint.

h. 62. A galeated Echinus. Out of the great Chalk-pit, at *Northfleet, Kent.*

h. 63. *Purfleet, Eſſex.*

h. 64. *Netlebed, Oxfordſhire.*

h. 65. *Chizlehurſt, Kent.*

h. 66. *Croydon, Surrey.*

h. 67. *North-Tudworth, Wiltſhire.*

h. 68. *Graveſend, Kent.*

h. 69. *Rygate, Surrey.*

h. 70. *Greenhithe, Kent.*

h. 71. *Charlton, Kent.*

h. 72. *Marlborough Downs.*

h. 73. *Deptford.*

h. 74. From - - - - - betwixt *Southampton* and *Portſmouth.*

h. 75. *Greenwich, Kent.*

h. 76. A galeated Echinus almoſt wholly fill'd with a dark grey Flint, found in ſinking a Well at *Sarret*, a Village 5 Miles from *Watford* in *Hertfordſhire*. It lay 26 Fathom deep in the Chalk, on an Hill. 'Tis compreſs'd and ſomewhat broken.

h. 77. Another, which ſhows the Sutures very diſtinctly on the Baſis. *Greenhithe, Kent.*

h. 78. Another having parts of Vermiculi, and ſome other Shells affix'd to it, and a good number of the Remains of the Spar of ſome Shell-fiſh, vid. *h*. 24. *Northfleet, Kent.*

h. 79. Another with ſeveral bottoms of ſmall Balani on it. *Croydon, Surrey.*

h. 80. Another with parts of ſome Bivalve adhering, which are probably a ſort of the Oſtrea Arborea: and ſome ſmall Coralline Effloreſcencies. *Chizlehurſt, Kent.*

h. 81. Another with part of a large Bivalve of the ſame kind, and three Effloreſcencies of Coral. They are round, $\frac{1}{4}$ of an Inch in Diameter, and the Striæ appear plainly in them running from the Circumference to the Center, as in many ſorts of Coral. *Greenwich, Kent.*

h. 82. Another with ſome Vermiculi and the flat Shell of a ſmall Pecten adhering to it. *Croydon, Surrey.*

h. 83. A piece of another with ſeveral Vermiculi upon it. *Ibid.*

h. 84. A Shell of this kind, cut in two, to ſhew the inſide. *Northfleet, Kent.*

h. 85. A piece of a larger with the flat Shell of an Oyſter upon it, and ſome Remains of Spat. *Greenhith, Kent.*

h. 86. Another broken to ſhew the Chalk contain'd in it. *Ibid.*

h. 87. Another broken, ſo as to diſcover it to be quite fill'd with Flint. It has the flat Shell of a ſmall Pecten and the Bottoms of ſeveral Balani upon it: as alſo a Body flat and round, about $\frac{1}{4}$ of an Inch over, and very beautiful, ſtriated from the Center to the Limbus, like the Porpitæ, and appear to be of like Original. *Deptford.*

h. 87^{x}. A Shell of the ſame Species with the precedent: having a like ſtriated coralloid Body upon it, very fair. *Northfleet, Kent.*

h. 88. Another fill'd quite full with Flint, ſo as to run out at both the Foramina: and has beſides a pretty big Maſs of Flint concreted on the outſide at the top of the Shell. It has Spat, the bottoms of Tree-Oyſters and ſlender ramoſe coralline Efflorescencies upon it. *Deptford.*

h. 88^{x}. A galeated Echinus, of a Species different from all the foregoing, being copped, and in ſhape ſomewhat more conic than any of thoſe. Indeed thoſe differ conſiderably from each other in Shape, as do alſo the Echinitæ or Flints, *h.* 92. *& ſeq.* that were form'd in like Shells; ſome being of a compreſs'd, others of a round Figure, ſome ſquat or depreſs'd, others rais'd. This was taken forth of a Chalk-pit, near *Norwich.* The Echinites, *h.* 91. ſo nearly reſembles this in Shape, that it probably was form'd in a Shell of this Species.

h. 89. The Impreſſion of part of the Shell of an Echinus of this kind, in which the Sutures appear very plainly; taken out of a Gravel-pit near *Greenhithe, Kent.*

h. 90. An Echinites, conſiſting chiefly of a grey Flint, but towards the top of Cryſtal, finely wrought and cancellated. Given me by Sir G. *Wheeler.* 'Twas found upon an Hill, amongſt other Flints near *Charing* in *Kent,* in the midway betwixt *Maidſtone* and *Canterbury.*

h. 91. An Echinite, very large, beautiful and perfect, having taken the Impreſſion of all parts of the Shell and even of the Sutures very diſtinctly. [*Conf.* N°. *h.* 88^{x}. *ſupra.*] Found in a Gravel-pit in *Hyde-Park.*

h. 92. Another leſs. I found this not far from *Marlborough:* and obſerved others of this ſort, and about this ſize, in ſeveral of the Downs of *Wiltſhire.*

h. 93. Another. From the Gravel-pits at *Greenhithe, Kent.*

h. 94. Another. *Henley* upon *Thames.*

h. 95. Another. Gravel-pit, near *Iſlington* Wells.

h. 96. Another. *Banſtead-Downs, Surrey.*

h. 96 ˣ. Another found in a Gravel-pit, at *Buſh-Hill*, near *Enfield*, *Middleſex.*

h. 97. Another from *Box-hill*, in *Surrey.*

h. 98. Another found in the Fields near *Eyton Bray*, *Bedfordſhire.*

h. 99. Another. *Eltham*, *Kent.*

h. 100. Another from *Netlebed*, *Oxfordſhire.*

h. 101. Another, *Marybone*, *Middleſex.*

h. 102. Another, near *Lee*, on the Edge of Black-Heath, *Kent.*

h. 103. Another, a Gravel-pit near *Chelſea-College.*

h. 104. Another. *Hopwell*, *Derbyſhire.*

h. 105. Another, *Ockbrook*, *Derbyſhire.*

SECTIONIS II. ARTICULUS II.

Spatagi altero foramine in Baſis centro, altero in margine.

DIVISIO I.

Figura ad Conoidem accedente, Pileati aliquibus dicti.

Some of theſe are higher, and more copped or acuminated; other lower, and more round. They are of different ſizes from near two Inches to $\frac{1}{5}$ of an Inch in height. Some of them are fill'd with Chalk, others with Flint.

h. 106. A pileated Echinus, taken up, with different Shells of ſeveral kinds, Sharks Teeth, and other marine Bodies, in a Stratum of Chalk above 50 Foot deep, near *Greenhithe*, *Kent.*

h. 107. *Croydon*, *Surrey.*

h. 108. *Deptford.*

h. 109. *Northfleet*, *Kent.*

h. 110. Ibid.

h. 111. *Rygate*, *Surrey.*

h. 112. *Purfleet*, *Eſſex.*

h. 113. *Netlebed*, *Oxfordſhire.*

h. 114. *North Tudworth*, *Wiltſhire.*

h. 115. *Greenwich*, *Kent.*

h. 115ˣ. An Echinus with a reticular Accretion upon it, extremely fair. Whether this be the Spat of ſome Shell-fiſh, or an Alga: or a coralloid Body, I cannot tell; but 'tis at this day found alſo upon the Shells at Sea.

h. 116. Another, full of Flint, with Flint adhering outwardly to the Hole in the Centre at the Baſe. It was a very large piece of Flint; but being of no Uſe, I broke moſt of it off. Out of the great Chalk-pit, on the edge of *Black-Heath* near *Deptford.*

h. 117. Another, with the flat Shell of a Pecten adhering to it. *Northfleet*, *Kent.*

h. 118. A pileated Echinus cut in perpendicular, and emptied of the Chalk, to ſhew the Inſide of it. *Greenwich*, *Kent.*

h. 119. Another, cut horizontally. *ibid.*

h. 120. Another. *Croydon*, *Surrey.*

h. 121. Another. *Charlton*, *Kent.*

h. 122. *Northfleet, Kent.* This, and the following, to 133, are not quite ſo rais'd and conical as the foregoing.

h. 123. *Graveſend, Kent.*

h. 124. *Ibid.* *h*. 124^{x}. *Purfleet, Eſſex.*

h. 125. *Ibid.*

h. 126. *Rygate, Surrey.*

h. 127. *North Tudworth, Wiltſhire.*

h. 128. *Northfleet, Kent.*

h. 129. *Croydon, Surry.*

h. 130. *Chizlehurſt, Kent.*

h. 131. *Marlborough Downs, Wilts.*

h. 132. *Northfleet, Kent.*

h. 133. *Ibid.* broken to ſhew the Flint included.

h. 134. *Deptford.* This, and the following, to 139^{x}, are ſtill lower and rounder, ſeeming to be of a different Species.

h. 135. *Croydon, Surry.*

h. 135†. *Greenwich, Kent.*

h. 135*. *Purfleet, Eſſex.*

h. 136. Out of a Chalk-pit on *Marlborough-Downs, Wilts.*

h. 137. *Deptford.*

h. 138. *Ryegate, Surrey.*

h. 139. *Graveſend, Kent.*

h. 139^{x}. *Northfleet, Kent.*

h. 140. A large piece of a Shell, partly immers'd in a Black Flint, and partly fill'd with the ſame. From the great Chalk-pit at *Northfleet, Kent.*

h. 140^{x}. A Shell of this pileated Kind, ſomewhat compreſs'd and crack'd, fill'd with black Flint, and having a Maſs of the ſame, adhering at one of the Holes of the Shell to the outſide of it in ſuch manner, that the Flint within is contiguous with that without the Shell. *Northfleet.*

h. 141. Another, immers'd in a flinty Peble. The inſide of this Shell is ſeen. Found near the mineral Wells on *Sydenham Common.*

h. 142. An Impreſſion of the Baſis of an *Echinus pileatus*, very fair, and diſtinct in a yellow Flint. Near *Deptford.*

h. 143. A ſmall Echinite of the ſame ſort with thoſe 122, *&c.* to 131. having curiouſly taken off the Lineaments of the inſide of the Shell, found lying looſe in a Cavity in the middle of a grey flinty Peble; which Cavity throws alſo the Lineaments of the outſide of the Shell. Found in a Gravel-pit near *Graveſend, Kent.*

h. 143^{x}. The Shell of a pileated Echinus, of a ferruginous Complexion, with Parts of the Pyrites growing upon it, in five double Lines, upon the five linear Commiſſures of the Shell, where 'tis perforated with ſmall Holes ſtanding in Rows. There are alſo other-like linear Accretions of the Pyrites that interſect the former; theſe probably attending Cracks that happen'd to be in the Shell. There appears an ochreous Matter at the two Holes: but, by its Weight, the Shell ſeems to be fill'd with the Pyrites. This very great Curioſity was found in the Chalk-pit by *Greenhithe*; in which Pit Pyritæ of the like Conſtitution, and this ferruginous Complexion, are commonly found. See that exhibited in the former Part of this Catalogue, N° *h*. 3.

h. 144. An Echinite, conſiſting of a white flinty calculous Matter. Found in a Gravel-Pit on *Mitcham-Common, Surrey*.

h. 145. This has ſome degree of Diaphaneity, and approaches the Conſtitution of an Agate. Gravel-pit, near *Hampſtead* Town.

h. 145 ˣ. An Echinite of a dark grey Flint; towards the top is an Hollow that appears to be made by the Shell's being preſs'd in by ſome external Force. Found on the Downs near *North-Tudworth, Wiltſhire*.

h. 146. Another, of a dark brown Colour. *Walthamſtow, Eſſex*.

h. 147. Another. Found on the Weſt-ſide of *Mill'd-Hill*, near *Hendon, Middleſex*.

h. 148. Another. *Bromley, Kent*.

h. 149. Another, of white Flint. *Henley* upon *Thames*.

h. 150. Another, of red Flint. *Chizlehurſt, Kent*.

h. 151. Another, of a dark brown Flint. Found upon the Hill near the Obſervatory in *Greenwich-Park*.

h. 152. Another. *Hornſey-Wood, Middleſex*.

h. 153. Another. This appears not to have fill'd the Shell, but has pretty large Cavities on ſeveral parts of it, as if the Fiſh, or Parts of it, were interpos'd betwixt the Shell and the Flinty Matter entering of it, whilſt in Solution. *Barkhamſtead, Hertfordſhire*.

h. 154. Another. On the top of which is a Cavity, with five Sinus's radiating out, at equal diſtances from it, Poſſibly the Fiſh of this Species of Echinus, may have been of a ſtellar Figure. And if ſhrivell'd, or forced up into a ſmall compaſs, being interpoſed at the top of the Shell, the Flint entering it, would have ſuch a Cavity at top, as is obſervable in this. *Cane-Wood*, betwixt *Hampſtead* and *Highgate*.

h. 155. An Echinite of a brown Flint, appearing to be caſt in a Shell of the ſame ſort with that *h*. 122. *Stoke-Newington, Middleſex*.

h. 156. Another. *Richmond, Surrey*.

h. 156 ˣ. From ------ in *Suſſex*.

h. 157. Another. *Kentiſh-Town, Middleſex*.

h. 158. Another. *Harrow on the Hill, Middleſex*.

h. 159. Another. *Lullingſton-Park*, near *Ainsford, Kent*.

h. 160. Another, of a grey Flint, of a rounder Figure than any of the former; and appearing to have been caſt in a Shell of the ſame ſort with that *h*. 134.

h. 161. Another. *Netlebed, Oxfordſhire*.

h. 162. Another. Found in the Fields near *Eyton-Bray, Bedfordſhire*.

h. 162 ˣ. Another. From *Great-Bowdon, Leiceſterſhire*.

h. 163. Another, of a dark brown Colour. *Enford, Wiltſhire.*

h. 164. Another. *Hitchin, Hertfordſhire.*

h. 165. Another. *Banſtead-Downs.* I found one very like this on plough'd Lands, near *Watford, Hertfordſhire.*

h. 166. Another, of a whitiſh Flint. *Thorp, Northamptonſhire.*

h. 167. Another. Near *Fulham, Middleſex.*

ARTICULI II. DIVISIO II.

Spatagi Figura magis compreſſa, ſeu Diſcoides.

h. 168. A large Echinus, near 2 Inches in Diameter, and $\frac{3}{4}$ of an Inch high. On plough'd Lands, near *Woodſtock, Oxfordſhire.*

h. 168 ˣ. Another, with the Baſis ſomewhat leſs. *Witney, Oxfordſhire.*

h. 169. Another, with the Baſis ſtill leſs, it being but an Inch and $\frac{1}{4}$ in Diameter; but the convex Part is raiſed ſomewhat higher than the Convex of that.

h. 170. Another, of the ſame Species with the laſt, but leſs. *Aulſworth, Glouceſterſhire.*

h. 171. Another, ſtill leſs. *Cowley-Common, Oxfordſhire.*

h. 172. Another, leſs. *Sherborn, Glouceſterſhire.*

h. 173. Another, leſs. *Ibid.*

h. 174. Another, leſs. *Over-Sloughter, Glouceſterſhire.*

h. 175. Another, leſs. Found along with *Cornua Ammonis, Conchæ Anomiæ,* and other Shells, near *Silverton, Devonſhire.*

h. 176. Another, leſs. *Garſington, Oxfordſhire.*

h. 177. Another, leſs. *Hampnet, Glouceſterſhire.*

h. 177 ˣ. An Echinite of Flint, black, with a Caſt of yellow. Found near *Norwich.*

CLASSIS V. PARS II.

Echini uno tantum foramine præditi, Tuberculis majoribus & inæqualibus, ſeu OVARIJ.

h. 178. An Echinus, 2 Inches in Diameter. From the Chalk-pits at *Greenhithe.* 'Tis full 2 Inches in breadth, and but $\frac{1}{2}$ an Inch in height; and conſequently is ſomewhat flatter than the *Echinus Ovarius.* Found now on the *Engliſh* Coaſts. The Tubercula in this are alſo larger than thoſe of the *Engliſh* Echinus Ovarius.

h. 179. Another, from the Chalk-pit at *Deptford.* This is not of quite ſo compreſs'd a Figure as the former, and ſo more nearly approaches the Figure of the *Engliſh* Echinus Ovarius.

h. 180. Another, with part of a Bivalve, and a little Spat upon it. Found in the great Chalk-pit at *Northfleet.*

h. 181. Another. *Northfleet.* This has a Spike along with it, which is ſmooth: and in all probability this kind of Spike belongs to this Species of Shells. *Conf. h.* 210*. & *h.* 226. *infra.*

h. 182. Another, depreſs'd by ſome external Force, ſo as to make a large Sinus on one ſide. *Deptford.*

h. 183. Another, full of Flint. Chalk-pit at *Northfleet*.

h. 183*. Another, full of Flint, and immers'd in Flint. From the Chalk-pit at *Greenhithe*.

h. 184. Another, from the ſame Place, full of Flint. The Flint too that, while in Solution, fill'd it, having run over, and ſo hanging forth a good way beyond the Shell, till broken off. *Purfleet, Eſſex*.

h. 185. Another, having ſeveral of the Spines actually upon it, with more lying by in the Chalk: beſides ſeveral others that were ſhook off in the clearing away the Chalk. From *Greenhithe, Kent*.

h. 186. Another, fill'd with Chalk, with a Congeries of ſmall long Bodies appearing in the Chalk, at a Hole on the upper Part of the Shell. Theſe Bodies ſeem to be ſome of the little Bones found in this Fiſh, and which are uſually call'd its Teeth, and lie alſo in this part of the Shell. *Croydon, Surrey*.

h. 187. Another, fill'd with Chalk. *Ibid.*

h. 188. Another, empty'd, ſo as to ſhew the interior Conſtitution of the Shell. *Ibid.*

h. 189. Another, with the Teeth mentioned, *h*. 186. *Greenhithe, Kent*.

h. 190. Another. Found near the Surface, in a Quarry near *Farmington-Grove, Glouceſterſhire*.

h. 191. Another, found lying amongſt Rubble-Stones, under the Turf, near *Sherborn, Glouceſterſhire*.

h. 192, 193. Two ſmall ones; the one fill'd with Flint, the other with Chalk. *Greenwich, Kent*.

h. 194. Another. From the Chalk-pit at *Northfleet*.

h. 195. Two others, very ſmall. *Ibid.*

h. 196. Another ſmall one, found amongſt Rubble, over a Quarry of Stone near *Woodſtock, Oxfordſhire*.

h. 197. Four ſmall ones, from a Stone-pit on *Cowley-Common*, near *Oxford*.

h. 198. An Echinus, fill'd with Stone. This more nearly reſembles our common Echinus. *Stow* on the *Wolds, Glouceſterſhire*.

h. 199. Another. *Burford, Oxfordſhire*.

h. 200. A ſmall one; but having the Tubercula larger, for the Size of the Shell, than any of the former. 'Tis fill'd with Stone, among which appear ſome of the Teeth. *Vid. h*. 186. *Barrington, Glouceſterſhire*.

h. 201. Another. *Shot-over-Hill*, near *Oxford*.

[A] *h*. 202. A ſmall one, of the common *Engliſh* ſort. *Sherborn, Glouceſterſhire*.

h. 203, 204. Two more, of the ſame Size with the precedent, but worn ſmooth. *Tangley, Oxfordſhire*.

h. 205. Another leſs. *Ibid.*

h. 206. A Piece of a Shell, kept to ſhew the interior Conſtitution of it, and how exactly the Flints, caſt in this kind, have been moulded by it. *Deptford*.

h. 207. An *Echinus Ovarius*, of a Species different from all the precedent, being more raiſed, and of a Figure more globoſe: The Plates and Papillæ are larger likewiſe. There are two of the Spines in the Chalk along with it. From *Greenhithe-Chalk-Pits*, *Kent.*

h. 207^×^. Part of another, of the ſame Species, but ſomewhat leſs. Found about 60 Foot deep, in the great Chalk-Pit, *Purfleet*, *Eſſex.*

h. 207*. Part of another, larger. *Croydon, Surrey.*

h. 208. Seven Plates of the Shells of Echini, of the ſame Species with the foregoing, parted at the Sutures, with the Papillæ upon 'em, all large. From the Chalk-Pits of *Purfleet, Greenhithe,* and *Northfleet.*

h. 209. A Plate and a Shell of the ſame Species, larger than any of the former. From a Quarry half a Mile North-Weſt of *Clipſton, Northamptonſhire.* Mr. *Morton.*

h. 210. Five Plates, of Shells of ſtill the ſame Species. From ------ *Northamptonſhire.* Mr. *Morton.*

h. 210^×^. Three Plates of a Shell of a different Species, very rare. *Greenhithe* Chalk-Pits.

h. 210†. Part of a Shell of an Echinus, different from all the foregoing. *Greenhithe, Kent.*

h. 210*. The Shell of an *Echinus Ovarius*, of the ſame kind with that *h.* 181. having ſeveral ſmooth Spikes lying in the Chalk along with it. *Greenhithe.*

h. 211. Parts of a large Shell, of the ſame Species with *h.* 207. broken, and lying in a Maſs of Chalk, along with ſeveral Spines that are thick ſet with Rows of ſmall Knobs; which probably are the Spines that belong to this Species. *Greenhithe, Kent.*

h. 212. A large Spike, with ſeveral leſſer, in Chalk. *Purfleet, Eſſex.*

h. 213. Several ſmall ſmooth Spikes, in Chalk. *Charlton, Kent.*

h. 214. A Spike of an Echinus, of the ſame ſort with thoſe called *Lapides Judaici*, ſwelling from a ſhort Stalk into a large Knob. Found in a Gravel-pit in *St. George's-Fields.*

h. 215. Several ſhort, craſs, round Spikes, of different Sizes and Figures. From the Chalk-pits of *Eſſex, Kent,* and *Surrey.* There are of theſe tumid Spikes found, in plenty, near *Wooton-Baſſet, Wiltſhire.*

h. 216. A very large Spike. From *Cowley-Common,* near *Oxford.*

h. 217. A leſs, on Stone. *Broadwell-Grove, Oxfordſhire.*

h. 218. Two on a Stone, along with ſeveral Bivalves. *Sherborn, Glouceſterſhire.*

h. 219. A ſmall, ſlender, ſmooth one, on Stone. *Windruſh, Glouceſterſhire.*

h. 220. A very fair one, large, near 2 Inches and $\frac{1}{2}$ long, thick ſet with Knobs in Rows; with part of the Chalk wherein 'twas found lodg'd. At the Depth of above 40 Foot, in the great Chalk-pit at *Purfleet, Eſſex.*

*h.*221. Another. *Ibid.*

*h.*222. Another, different. *Graveſend, Kent.*

*h.*223. Several, of different Sizes, ſwelling a little towards the Middle. From the Chalk-pits of *Eſſex, Kent,* and *Surrey.*

*h.*224. Several others, of near the ſame Thickneſs for their whole Length. Out of the ſame Chalk-pits.

*h.*225. Others, of different ſorts; from the Stone-pits of *Glouceſterſhire, Oxfordſhire,* and *Northamptonſhire.*

[†] *h.*226. Others ſmooth and ſlender, of near the ſame Thickneſs throughout. Theſe belong to that Species of Echinus that is exhibited, *h.* 181. & *h.*210*. *Deptford.*

*h.*227. A ſmall Echinus, fill'd with Flint, and part of it immers'd in a Maſs of Flint, which was very large; but what remains was ſtruck off from the reſt. *Croydon, Surrey.*

*h.*228. An Echinite, conſiſting of a brown Flint, caſt in the Shell of an *Echinus Ovarius,* of the ſame ſort with *h.* 178. but ſomewhat leſs. *Shooter's-Hill, Kent.* By comparing this with *h.* 188. & *h.* 206. 'twill appear how exactly it anſwers to the Inſide of that Species of Echinus, in which it appears to have been caſt and moulded.

*h.*229. Another, of a yellowiſh Flint, but leſs. *Peckham, Surrey.*

*h.*230. Another, leſs, immers'd in a yellow Flint. Round the Echinite is a Vacancy anſwerable to the Dimenſions of the Shell. Found on the Downs near *Croydon.*

*h.*231. Another, leſs. *Finchley-Common, Middleſex.*

*h.*232. Another. *Harrow-on-the-Hill, Middleſex.*

*h.*233. Another. *Stretham, Surrey.*

*h.*234. Another. *Caſhalton, Surrey.*

*h.*235. Another, of a dark brown Colour. *Mitcham-Common.*

*h.*236. An Echinite, of ſtill the ſame ſort, of a greeniſh Flint, not above the bigneſs of a Vetch; found, in breaking a large Flint, inclos'd in the middle of it. *Barkhamſtead, Hertfordſhire.*

*h.*237. A flinty Peble, having on it an Impreſſion of part of the Shell of an *Echinus Ovarius,* with Impreſſions of eleven tumid *Aculei,* of that ſort which paſs ordinarily by the name of *Lapis Judaicus,* ſurrounding the Impreſſion of the Shell, having all their Apices from it, and their Heads towards it, in ſuch manner, that the *Aculei* ſeem to have belong'd to, and been affix'd on to the Shell that made the Impreſſion in the midſt of them. Found in a Gravel-pit near *Copenhagen-Houſe,* beſides *Iſlington, Middleſex.*

*h.*238. A fair Impreſſion, of part of a Shell of a very large *Echinus Ovarius,* on an Agate; found in Mr. *Heart*'s Park at *Lullingſton,* near *Ainsford* in *Kent.*

*h.*239. An Impreſſion of part of a Shell of an Echinus of that ſort, *h.*207. on a grey Flint. A little beyond *Highgate, Middleſex.*

*h.*240. Another; from - - - - - in *Huntingtonſhire.* Mr. *Morton.*

*h.*241. Another. *Kingſland, Middleſex.*

*h.*242. An Impreſſion of a ſingle Plate of a Shell of the ſame Species, taken off with great Exactneſs. 'Tis on a grey Flint. *Hampſtead-Heath.*

h. 243. An Impreſſion of part of a Shell of ſtill the ſame ſort, and of a Spike belonging to that ſort too; being of the ſame with thoſe *h*. 223. Upon brown Flint. Among Gravel, near *Northfleet, Kent*.

h. 244. An Impreſſion of a Plate, and Spike, alſo of the ſame Species ſtill, on a dark brown Flinty Peble. *Hampſtead-Heath*.

h. 245. An Impreſſion of a long, round, ſcabrous Spike of that ſort, *h*. 224. Found, upon breaking a Flinty Peble, inclos'd in the Maſs of it. Gravel-pit, near *Graveſend, Kent*.

h. 246. An Impreſſion of another leſs, in the middle of a flinty Peble, variegated with yellow, grey, *&c*. Gravel-pit near *Greenhithe*.

h. 247. Another like Impreſſion, on a browniſh flinty Peble. *St. George's-Fields, Southwark*.

h. 248. Another, more ſlender, on a coarſe grey Peble. *Hampſtead-Heath*.

h. 249. An Impreſſion of a pretty large Spike of the ſame ſort, on a brown flinty Peble. This Spike appears to have been broken, and inflected, when it made this Impreſſion. *Dartford, Kent*.

h. 250. An Impreſſion of a thick ſhort Spike, much reſembling one of thoſe, *h*. 215. on a greyiſh Flint. In Gravel, near *Hackney, Middleſex*.

h. 251. Another. *Downs*, not far from *Epſom, Surrey*.

h. 252. Another, on a yellowiſh flinty Peble. *St. George's-Fields, Southwark*.

CLASSIS VI.

Corpora quædam Echinis, ut videtur, affinia.

i. 1. A pentagonal Body; compos'd of two Rows of ſmall Joints. Chalk-pit at *Northfleet, Kent*.

i. 2. Several Parts and Joints of the ſame. From the ſame Place.

i. 2$^{\times}$. Part of a like pentagonal Body. In this the exterior Surfaces of the Joints are thick ſet with ſmall Studs. From the great Chalk-pit, near *Croydon, Surrey*.

i. 3. Seven Joints, larger than any of the precedent, of another ſort of Body. *Graveſend, Kent*.

i. 4. Several ſmall Joints, of another ſort. From the Chalk-pits of *Kent, Eſſex*, and *Surrey*.

i. 5. Several other Joints, ſwelling in the middle. From the Chalk-pits of *Croydon, Purfleet, Deptford, Northfleet*, and *Greenhithe*.

i. 6. Several long Joints, of like Bodies. From the Chalk-pits of *Eſſex, Kent*, and *Surrey*.

i. 7. Several other long Joints, ſwelling at one end into a Knob, upon which is a pentagonal Figure. Out of the ſame Chalk-pits.

i. 8. A ſingle one, of the ſame kind, the Knob of which adheres to a ſmall round Flint. *Greenhithe* Chalk-pit, *Kent*.

i. 9. A jointed Body, branched irregularly with a Piece of the Chalk in which it was found. *Northfleet, Kent.*

i. 10. Several of theſe ramoſe jointed Bodies. From ſeveral Chalk-pits in *Kent*. Theſe broke, ſhew plainly a Texture like that of the Spikes of the *Echini Ovarij*, and ſeem to have ſerv'd as Appendages, or Trains to ſome kind of Shell allied to that *Echinus*. See what is noted of the *Entrochi*, CLASS vii. and of the *Aſteriæ*, CLASS viii. both which Bodies are alſo of like interior Texture and Conſtitution, and break in like manner.

i. 11. Several Bodies of different, but regular Figures. From *Cowley-Common*, near *Oxford*.

i. 12. Part of the Shell of ſome Body, ſeeming to be a Piece of ſome uncommon kind of *Echinus*, lying in a whitiſh gritty Stone. From a Stone-pit South-Eaſt of *Wakerly*. There are Fragments of other Shells, and Ova of Fiſhes in the ſame Stone.

i. 13. An Impreſſion of ſome Body, ſeeming to be of the ſame kind with the foregoing, in a grey Flint. *Hampſtead-Heath, Middleſex.*

CLASSIS VII.

ENTROCHI & TROCHITÆ.

Theſe Bodies are of much the ſame Texture and Conſtitution with the Spikes of the *Echini Marini*; and have ſerv'd as Appendages, or Trains, to a Shell not very unlike that of the *Echinus Ovarius*; but tender and brittle, ſo that 'tis rarely preſerved. Mr. *Beaumont* has graved one Species of it, *Philoſ. Tranſ.* N° --- I have conſider'd theſe Bodies more particularly in one of my *Greſham Lectures*, Confer. N° *i.* 10. *ſupra.*

k. 1, 2, 3, 4, 5, 6, 6 ×. *Entrochi*; found at *Stainton*, two Miles from *Penrith, Cumberland*, in a Bank near a Spring, very plentifully. Dr. *Nicholſon*, Lord Biſhop of *Carliſle*.

k. 7, 8, 9. On the Shore of the River near *Moreland*, and in *Weſtmorland*, where ſuch are found pretty plentifully. Bp *Nicholſon.*

k. 10. Bp *Nicholſon*. Out of the Dioceſe of *Carliſle*.

k. 11. Bp *Nicholſon*. *Ibid.*

k. 12. Bp *Nicholſon*. *Ibid.*

k. 13. Many, ſmall, red. Bp *Nicholſon*. Alſo a Pentagonal of one of the Shells, to which this ſort belong. From *Howlees*, betwixt *Newbiggin* and *Stainton, Cumberland*.

k. 13 ×. Many ſmall Joints. Mr. *Nicholſon*. Dioceſe of *Carliſle*.

k. 14. *V. Lhwudij*, Num. 1136. Bp *Nicholſon*. *Ibid.*

k. 14 ×. From *Cumberland*. Mr. *Clarke*.

k. 15, 16, 17. Found in the Shore of a River near *Threapland, Weſtmorland*. Mr. *Clarke*.

k. 18. In the ſame Place. Compreſs'd and flatted.

k. 19, 20, 21, 22, 23. Five compreſs'd, from ſtill the ſame Place.

k. 24, 25, 26, 27. Hollow in the middle, and fill'd with a grey ſtoney Matter. From the ſame Place alſo.

k. 28, 29, 30, 31, 32, 33. Found in the Bank of a Rivulet at *Ploveridge*, near *Shap*, *Weſtmorland*. They call them there *Fairy-Stones*. Mr. *Clarke*.

k. 34, 35, 36, 36^{x}, 36^{*}, 37, 38, 39. Eight, large, with Veſtigia of Branches proceeding forth of them. Mr. *Clarke*.

k. 40, 41. Two, large, ſwelling in the Middle. Bp *Nicholſon*. Dioceſe of *Carliſle*.

k. 42. Many, ſmaller; from the Banks of the Brook *Ellerbeck*, near *Torpenhoe*, *Cumberland*. Mr. *Clarke*.

k. 43. Many ſingle Joints. Mr. *Nicholſon*, and Mr. *Clarke*.

k. 44. Many *Entrochi*, and ſingle Joints. *Cumberland*. Mr. *Clarke*.

k. 45. An *Entrochus*, with a Coralline Body adhering to it. Bp *Nicholſon*. Dioceſe of *Carliſle*.

k. 46. Two, with Spat adhering. Mr. *Nicholſon*. *Ibid*.

k. 47. An *Entrochus*, with many Branches ariſing out of it. Found near *Ipſwich* in *Suffolk*.

k. 48. Found in the Rubble caſt out of a Lead-Mine near *Richmond-Moore*, *Yorkſhire*.

k. 49. Found, looſe, in the bottom of a Quarry by the ſide of the Road to *Fremington*, 2 Miles from *Mask*, *Yorkſhire*.

k. 49^{x}. Found in the *Iſle of Man*; and ſent me by Dr. *Wilſon*, Lord Biſhop of that Iſland.

k. 50. Found near *Wooky-Hole*, by *Wells*, *Somerſetſhire*.

k. 51. Several *Entrochi*, in Joints; alſo a Piece of the Shell. From *Mendip-Hills*, *Somerſetſhire*.

k. 52. In the great Lime-pit, near *Dudley-Caſtle*, *Staffordſhire*.

k. 53. From a Lead-Mine, near *Workſworth*, in the *Peak*, *Derbyſhire*.

k. 54. Three Joints. *Haddon* Paſtures, in the *Peak*, *Derbyſhire*.

k. 55, 56. Two *Trochitæ*. Found in a Heap of Clay in the Paſture of *Haddon*, in the *Peak*, near the Earl of *Rutland*'s Houſe.

k. 57. From ſeveral Places on *Mendip*, *Somerſetſhire*.

k. 57^{a}. *Entrochi*, of various Figures; found in the Rubble and Stone near *Charter-Houſe*, *Mendip*; where they occur in great Numbers.

k. 58. A Maſs of Stone, with ſeveral *Entrochi* in it, and Fragments of Shells; from a Pit near the Earl of *Rutland*'s Houſe, in *Haddon* Paſtures, in the *Peak*.

k. 59. A Maſs, very thick ſet with *Entrochi*. From the Quarry two Miles from *Mask*, *Yorkſhire*, mention'd above, *k*. 49. All the Stone of this Quarry is full of them.

k. 60. Another Maſs, as full of them as the former. From a Stone-pit, about 50 Yards in perpendicular, above the River *Swale*, on the ſide of a Hill about a Mile from *Richmond*, *Yorkſhire*. There were great Numbers of theſe, of Shells, and of Impreſſions of Shells upon the Stone.

k. 61, 62, 63. Three Maſſes, with *Entrochi*, and ſeveral Coralloid Bodies. From the great Limeſtone-Quarry, near *Dudley*, *Staffordſhire*.

k.64. A Maſs of grey Stone, thick ſet with *Entrochi*; from *Workſworth*, in the *Peak*.

k.65. Mr. *Southwell*. Found near *King's-Weſton*, in *Glouceſterſhire*.

k.66. *Ibid.*

k.67, 68, 69, 70, 71. Five Maſſes of Stone, extremely thick ſet with *Entrochi*, and having alſo in them Fragments and Impreſſions of Shells. Found on the South-ſide of *Ingleborough-Hill*, near the Top, *Yorkſhire*. Mr. *Groome*.

k.72. A Maſs of Stone, with *Entrochi*, Fragments of Shells, and ſome other jointed Bodies. Bp *Nicholſon*. Dioceſe of *Carliſle*.

k.73. Mr. *Nicholſon*. *Ibid.*

k.74. *Entrochi*, given me by Dr. *Evans*, Lord Biſhop of *Bangor*. From the Iſland of *Angleſey*.

CLASSIS VIII.

ASTERIÆ.

Theſe have ſerv'd, as the *Entrochi*, [*Vid.* Claſs 7.] as Appendages to Shells. See one of my *Greſham-Lectures*, concerning the Origin and Conſtitution of theſe Bodies. *Confer.* N° *i*. 10. *ſupra*.

l. 1. Several Columns of *Aſteriæ*, and ſingle Joints; from two plough'd Lands ¼ of a Mile South from *Marſton-Truſſel*, *Northamptonſhire*. One of the Columns has part of the Shell belonging to this Species ſtill adhering to it: and was found by Mr. *Howard*, Rector of *Marſton*. This laſt is ſince deſcribed by Mr. *Morton*, Nat. Hiſt. of *Northamptonſhire*, p. 239. Tab. 10. Fig. 19.

l. 2. Several Columns, and ſingle Stars, of different Sizes; from the ſame Place.

l. 3. Others, found plentifully in two Banks near *Whitton*, *Lincolnſhire*; where the People call them *Caſtles* and *Apoſtles*.

l. 4. Others, from *Aukborough*, *Lincolnſhire*.

l. 5. Others, from *Laſſington*, near *Glouceſter*.

l. 6. A Column, found on the Shore of the River, near *Moreland*, in *Weſtmorland*. Mr. *Clarke*.

l. 7. Another; found in a Bank, near a Spring, at *Stainton* near *Penrith*, *Cumberland*. Bp *Nicholſon*.

l. 7 x. A Column, ſomewhat bent, conſiſting of 18 Stars. From the Shores near *Hull*, *Yorkſhire*.

l. 8. Several ſmall Stars; found in the Quarries near *Sherborn*, *Glouceſterſhire*.

l. 9. Joints and Columns; from the Cliffs of the River *Severn*, near *Pyrton-Paſſage*.

l. 10. *Aſteriæ*; from *Shugborough*, *Warwickſhire*.

l. 11. Several Columns; from the Shores of the River near *Rugthorp*, *Yorkſhire*.

l. 12. A Column, with Fragments of Shells adhering to it; from *Lubenham-Brook*, *Leiceſterſhire*.

l. 13. Several Columns, Stars, and Wires; from the ſame Brook.

l. 14. Others, found in ſinking a Well at *Marſton-Truſſel, Northamptonſhire*.

l. 15. A very ſtrange one, ſeeming to be the Joint next the Shell. Found in ſinking the ſame Well at *Marſton*. Given me by Mr. *Howard,* Rector of the Town.

l. 16, 17. Two Columns, with Pieces of Shells adhering to them. From a Brook near *Marſton-Truſſel*.

l. 18. Several, with ſome of thoſe Branches that are wont to ariſe from them, call'd, by ſome, *Wires*. From the ſame Brook.

l. 19. A pentagonal Column, [an *Entrocho-Aſteria*] jointed, but not ſulcated, like the common *Aſteriæ,* betwixt the Angles. Found in a Bank, near a Spring, by *Stainton* in *Cumberland*. Bp *Nicholſon*.

l. 19x. Two Columns of the *Entrocho-Aſteria,* with five Sides: and one Column with four Sides. From *How-Lees,* betwixt *Newbiggin* and *Stainton, Cumberland*. Mr. *Clarke*.

l. 20. Three others. Bp *Nicholſon*. *Cumberland*.

l. 21. A Maſs of Stone, thick ſet with Columns, Stars, and Joints of Wires. Found on the Shores of *Severn* near *Arlingham*. In ſome of the Columns, the Manner of the Articulation, or Conjunction of the Stars, is very conſpicuous.

l. 22. A Maſs of Stone, with ſeveral Columns in it. Found in the plough'd Lands near *Marſton, Northamptonſhire,* along with *l*. 1. The Manner of the Articulations is likewiſe obſervable in this.

l. 23. A Maſs of Stone, with an *Aſteria,* ſeveral Joints of Wires, and Fragments of Shells; from the ſame Place.

l. 24. A Maſs of a dark grey Stone, with ſeveral Columns in it, vaſt Numbers of Joints of Wires, and ſome Fragments of Shells. From the Shores of *Severn,* near *Pyrton-Paſſage*.

l. 24x. Another like Maſs, but larger, very thick ſet with *Aſteriæ,* both ſingle and in Columns, very fairly diſplay'd; with Fragments of Shells. *Pyrton-Paſſage*.

l. 25. Another like Maſs. The Stars in this are white, gloſſy, and break much like the *Lapis Judaicus,* or tumid Spine of an *Echinus Marinus*. *Pyrton-Paſſage*.

CLASSIS IX.

CRUSTACEA.

m. 1, 2. Two ſmall Crabs, not much unlike thoſe which on the Coaſts of *Suſſex,* particularly about *Shoreham,* are called *Portugal Crabs*. Theſe were found in the Cliffs at *Folkſton,* near *Dover*.

m. 3. A Piece of the Claw of a ſmall Crab. From ------ in *Wales*. Mr. *Lhwyd*.

CLASSIS X.

Piſcium Partes.

n. 1. Part of the Skin of a Fiſh, with the Scales on, adhering to a Pyrites; found in the great Clay-pit, *Richmond, Surrey*. This Mr. *Doody* ſhew'd to Mr. *Ray*; and, in his *Phyſico-Theol. Diſcourſes*, he erroneouſly calls it, *a Maſs of Fiſhes*. Given me by Mr. *Doody*.

n. 2, 3, 4, 5, 6. Five Pieces of large Bones, ſeeming to be of Sea-Fiſhes. Found upon the Shore near *Harwich-Cliffs*. Mr. *Adam Buddle*.

n. 7. Several leſs. Found in the Stone-pits about *Witney, Oxfordſhire*. Mr. *Fitz-Roberts*.

n. 8. A large Vertebra of a Fiſh. Found on the plough'd Lands near *Walgrave, Northamptonſhire*. Mr. *Morton*.

n. 9. Another. Found in digging to lay the Foundation of a Wall at *Welham* in *Leiceſterſhire*. Mr. *Morton*.

n. 9^{x}. Two Vertebræ of the Back-Bone of ſome large Sea-Fiſh, dug up near *Bridport, Somerſetſhire*.

n. 9^{a}. Two Vertebræ of ſome large kind of Fiſh. They have Shells affixed to them; even upon the Flats, that were contiguous while the Fiſh were living; ſo that the Fiſh muſt have been dead, the Back-Bone broke, and the Vertebres parted and expos'd looſe in the Sea, or on the Shore, for ſome time, before the Deluge. For theſe were freſh beat out of the Cliff: and there are no like Shells now living in the adjacent Creek. Found on the Shores, on the Eaſt-ſide of a Creek, about a Mile above *Weymouth-Bridge*.

n. 9^{b}. A Vertebre. Found at *Pyrton-Paſſage*, over the *Severn*.

n. 9^{c}. A Vertebre. Got out of the Cliffs betwixt *Limington* and *Chriſt-Church*, about 5 Miles from the latter. There were ſeveral others, but much rotted and impair'd: The Soil here abounding with Vitriol, which erodes and deſtroys theſe Bodies.

n. 10, 10^{x}, 11, 12, 13, to 21. Vertebræ of Fiſhes of ſeveral Sizes. Found in the Cliffs on the North-ſide of *Sheppey-Iſland, Kent*.

n. 22, 23, 24, 25, 26, 27. Six others, flatter, belonging to ſome other Species of Fiſh. Two or three of theſe ſeem to have been Bones of Sharks. From the ſame Cliffs.

n. 28, 29, 30, 31, 32, 32^{x}. Six others, of different Sizes. *Richmond* Clay-pit, *Surrey*.

n. 32 †. Three Vertebres, pretty large, adhering together. One of them is ſomewhat diſlocated. There were five thus cohering when firſt found, but two of them are ſince broken off. There are Maſſes of the Pyrites concreted upon them. Found near 70 Foot deep, in the great Clay-pit at *Richmond, Surrey*.

n. 33. Two others, adhering together. From the ſame Clay-pit.

n. 34. A ſmall one. From - - - - in *Northamptonſhire*. Mr. *Morton*.

n. 35, 36. Two, pretty large ones; from the Cliffs of the *Humber*, near *Whitton, Lincolnſhire*.

n. 36^{x}. Another. *Pyrton-Paſſage*, over the *Severn*, *Glouceſterſhire.*

n. 37. A ſmall Bone of the Scapula Fin of a Porpus, Dolphin, or ſome other Fiſh of the Cetaceous Kind. Found in the Northern Cliffs of *Sheppey-Iſland.* This has ſomething of a Pyrites adhering to it, as ſeveral of the Vertebræ, and Gloſſo-petræ, found here, have.

n. 38, 39, 40. Having Pyrites adhering to them, are diſſolv'd and periſh'd.

n. 41. A large *Gloſſopetra*, or Shark's Tooth. From a Chalk-pit, at *Northfleet*, in *Kent*.

n. 42, 43, 43^{x}, 44, to 58. Eighteen Sharks Teeth, of different Figures and Sizes. From the Cliffs on the Shores of *Sheppey-Iſland.*

n. 59. From the ſame Cliffs. I have ſeen a young Shark, taken on the Coaſts near *Scarborough*, that had in the Jaws ſeveral Rows of Teeth, like this, *n.* 59. only ſomewhat leſs. That Fiſh was near 4 Foot in Length.

n. 60, 61. From the ſame Cliffs.

n. 62. Ten, from the ſame Cliffs.

n. 63. Eight, from the ſame Cliffs.

n. 63^{x}. A large Shark's Tooth, with the Root cover'd with a grey ſtoney Accretion. On the Outſide of which is a Subſtance, ariſing from the Roots of the Tooth, and ſeeming to be part of the Ligaments, by means of which the Tooth was connected to the Jaw. There is a bit of it broken off, and lying by. From the Cliffs by *Whitſtaple, Kent*.

n. 63 †, 63 *. Two more, leſs; from the ſame Cliffs.

n. 63^{a}, 63^{b}, 63^{c}. Three Sharks Teeth, digged out of a Cliff, at the depth of about 60 Foot, betwixt *Milford* and *Hordwell*, *Hampſhire*.

n. 64. Twenty-three, of different Sizes; from the great Clay-pit at *Richmond, Surrey*.

n. 65. Ten, of different Shapes and Sizes; from the Chalk-pits at *Greenhithe, Northfleet, Croydon*, and *Purfleet*.

n. 66. Another; from the great Chalk-pit at *Northfleet*.

n. 67. Another, broken; from a Tile Clay-pit, near *Highgate, Middleſex*.

n. 67^{x}. Another, fair and entire; found in a Pit of Clay, uſed for making Tiles, at *Harrow-on-the-Hill*. This Pit was in the Town; and the Workmen told me they met with theſe Teeth in the Clay pretty frequently: and that in ſinking a Well near the Church, Shells of ſeveral ſorts were found 70 Foot deep.

n. 68. In a Clay-pit, at *Weſt-End*, near *Hampſtead*.

n. 68^{x}. From the Clay-pit at *Hunton*, in *Kent*, mentioned by Dr. *Hatley*, *Philoſ. Tranſ.* N° 155. p. 463.

n. 69. Out of a Clay-pit on the Hill on the Eaſt-ſide of *Highgate*.

n. 69^{x}. Eight, ſmall; out of a Bed of blueiſh Clay 30 Foot deep, in a Tile Clay-pit, near *Iſlington, Middleſex.* There were found in the ſame Bed turbinated Sea-Shells, and Fragments of ſome kind of cruſtaceous Shell-Fiſh.

n. 69 †.

n. 70. In a Tile Clay-pit in *Epping-Foreſt*, about a Mile and half from *Waltham-Stow*, by the Road, almoſt at the Top of the Hill, near the Mill. Other like Sharks Teeth I have ſeen, that were digged up in another Pit betwixt that and the *Green-Man.*

n. 71. In a Chalk-pit, on the *Downs*, near *Smitham-Bottom*, not far from *Croydon, Surrey.*

n. 72. From *Cherry-Hinton* Chalk-pits, near *Cambridge.*

n. 73. From a Sand-pit, at the bottom of *Shooter's-Hill.*

n. 73^{x}. Found in a Tile Clay-pit, at *New-Croſs*, near *Deptford.*

n. 74. Four; from the Chalk-pits at *Northfleet, Kent.*

n. 75. From a Gravel-pit, near *Desborough, Northamptonſhire.*

n. 76. Several ſmall ones, found at *Farringdon, Berkſhire.*

n. 77. A conical Body, of a boney Subſtance, a little crooked, about half an Inch long. From a Stone-pit, near *Grindon, Northamptonſhire.* To this Kind Mr. *Lhwyd* gives the fantaſtic Name of *Plectronites.* (*Lythophyl. Britan.* Cl. 9. p. 66. *& ſeq.*) 'Tis the medullary Part of the Tooth of a large Fiſh. I have part of the Jaw, near 2 Foot long, with ſeveral other Pieces; found at the Depth of about 24 Foot, in a Quarry, in the Eſtate of Sir *Tho. Read*, near *Shipton, Oxfordſhire.*

n. 78. Eight other like boney Bodies, of different Sizes. From *Witney* and *Farrington, Oxfordſhire.*

n. 79. Several *Bufonitæ*, or Teeth of the *Lupus Marinus.* Found about *Witney*, and the Parts adjacent, *Oxfordſhire.*

n. 79^{x}. Fourteen Teeth of the *Lupus Marinus*, with part of the Jaw, or rather the Palate, of that Fiſh in which they are infix'd. From *Enſton, Oxfordſhire.* Mr. *Stoneſtreet.* This is a very great and valuable Curioſity. Mr. *Lhwyd* mentions a Piece of a Jaw, with three Teeth in it; *Philoſ. Tranſ.* N° 200. p. 755. N° 19. & *Lythophylac.* p. 70. N° 1368.

n. 80. Three more; from a Stone-pit, near *Grafton, Northamptonſhire.*

n. 81. Four oblong Bodies, ſeeming to have been Teeth, or Parts of boney Palates of Fiſhes. From a Gravel-pit, near *Desborough, Northamptonſhire.*

n. 82. Nine other from a Stone-pit, near *Grafton, Northamptonſhire.*

n. 83. Another from a Stone-pit, near *Farrington, Berkſhire.*

n. 84. Six Rhomboidal Bodies of like ſort. *Grafton* Stone-pit.

n. 84^{x}. Another, *Witney, Oxfordſhire.*

n. 85. Four ſmall Rhombs. *Desborough* Gravel-pit.

n. 86, 87, 88, 89, 90. Five oblong Rhomboids. From a Stone-pit, near *Grafton, Northamptonſhire.* To this kind Mr. *Lhwyd* has given the affected Name of *Siliquaſtrum.* 'Tis a boney Subſtance: and ſeems to have ſerv'd to cover the Tongue, or the Palate of ſome kind of Fiſh. *M. du Hamel* makes mention of ſuch a ſort of Coverture. " Vulpis marinæ Lingua præduris Oſſi-" culis, argenteis, non acutis, ſed quadratis munitur. Vidimus " Maxillas Piſcis quas Clariſſ. Abbas Gendron à Canadenſi Pro-" vincia attulerat, quæ ſtratæ erant dentibus complanatis, & duris ; " hæ Molarum inſtar, Cochlearum teſtas quibus veſcitur is Piſcis, " terunt." *Vid. du Hamel Phyſicæ Part.* 3. *Tract.* 3. *Diſſert.* 1. *c.* 1. *p.* 331. *d. in* 8°.

n. 91. Another, *Witney, Oxfordſhire.*

n. 92, 93. Two more. *Farrington, Berkſhire.*

n. 94. Found in the Gravel in Sir *Ralph Dutton*'s Court-yard, *Sherborn, Glouceſterſhire.*

n. 95. Another, from *Farrington, Berkſhire.*

n. 96. Another, near *Stunsfield, Oxfordſhire.*

n. 97. An oblong Body, black, full of very ſmall Puncta, *Witney.*

n. 98. Three ſmall Bodies from a Gravel-pit, near *Desborough, Northamptonſhire.*

n. 99. Two ſmall boney Bodies of an irregular Figure, having their Surface thick ſet with Puncta or little Holes. *Farrington, Berkſhire.*

n. 100. Part of a large hard, boney Subſtance, ſeeming to have been the Palate of ſome Fiſh, having its outer Surface ridged and furrow'd alternately. The Ridges are ſharp, except in the middle, and upper part, where it has been moſt expos'd to be fretted and worn in breaking the Shells of the Fiſh the Creature lived on ; in which part 'tis manifeſtly worn down, and the Ridges ſmoothed. 'Tis very hard and polite: and could not have been reduc'd thus but by long time and great force. Partly by that, and partly by the bigneſs of it, 'tis plain this was of ſome grown old Fiſh: and had been long uſed to grinding and breaking of Shells. Found near 40 Foot deep in the great Chalk-pit at *Greenhithe.*

n. 101. Another leſs and not of ſo old and grown a Fiſh as the former has been. Nor are the Ridges ſo much worn, which indeed is but a Conſequence of its not having been ſo long us'd. From a Chalk-pit, near *Rygate, Surrey.*

n. 102. Another ſtill leſs, and probably of a younger Fiſh; the Ridges being little or nothing ground. Out of a Chalk-pit near *Smitham* Bottom, betwixt *Croydon* and *Woodcot, Surrey.*

n. 103. Another, very little; the Ridges entire, and with their Edges very ſharp. From the ſame Chalk-pit near *Rygate,* with 101.

n. 103 ×. Part of a flat Tooth: or rather Grinder of a Palate. The Ridges and Eminencies of this are worn down by grinding, tho' it be ſmall; ſo that it ſeems to be of an old grown Fiſh, that had us'd and worn it long. Conſequently 'tis probable the Kind have ſeveral of theſe Grinders, leſs, and larger, diſtinct, in the ſame Jaw. From a Chalk-pit, on *Boxly-Hill.*

n. 103 †. A Tooth, found in the ſame Chalk-pit with *n.* 102 *upra,* near *Smitham* Bottom.

n. 103 ‡. A boney Body, flat on one ſide, and convex on the other, the latter thick ſet with ſmall Cavities in a very beautiful Manner. Out of a Chalk-pit near *Epſom, Surrey.*

n. 104. A Maſs of Stone made up almoſt entirely of the little round Pellicules of the Ova of Fiſhes, fill'd with a fine ſtoney Matter. There are in it ſome Particles of Spar, and Pieces of the Shells of Bivalves: or rather Spar that has ſucceded in the room of thoſe Shells, when periſhed and gone. Broke off a Stratum of Stone in the Quarry near *Nunnington, Yorkſhire.* Stone thus ſet with Ova has paſs'd amongſt the Writers of *Nat. Hiſt.* by the Name of the *Hammites.*—— "Gruppo d'Ova di ſepia petri- " ficate, Muſæo Coſpiano - - - - - vid. *Ketton-ſtone,* in Dr. *Hook*'s " *Microgr.* p. 93. Hammites Ovis piſcium ſimilis eſt. *Plin. L.* 37. " *c.* 10. Hammites in Helvetia effoſſus. *J. Scheuchzeri Specim.* " *Lithogr. Helvet.* p. 40.

n. 105. Another Piece of Stone with ſmall Ova in it. From *Desborough.*

n. 106. Another, out of a Quarry near *Shipton, Oxfordſhire.*

n. 107. Another, from a large Quarry, near *Northleach, Glouceſterſhire.* In this Quarry there are vaſt Strata, near the Surface, all full of theſe Ova.

n. 108. Another of a faint Purple Colour. From the great Quarry at *Ketton, Northamptonſhire.*

n. 109. Another, yellow. From the ſame Quarry.

n. 110. Another, yellow. Found near *Burleigh* Houſe; on the Edge of *Lincolnſhire.*

CLASSIS XI.

Quadrupedum Partes.

o. 1. Part of a large Horn of the Mooſe-Deer. Bp *Nicholſon.* See the Lecture about the Foſſil Mooſe-Deer's Horns of *England* and *Ireland.*

o. 2. Part of a large Tusk of an Elephant. This with its fellow of the ſame Size were dug up at *Bowden Parva, Northamptonſhire.* They lay in an horizontal Poſture in a Stratum of common Clay, above which was a Stratum of Gravel : and over that a Stratum of blue Clay. They were pretty entire when found, and each 16 Inches in Circumference in the thickeſt part. But being decay'd, this was ſhatter'd and broken in the Carriage. Mr. *Morton.* He ſearch'd the Clay that was dug and flung out there, but could find no other Teeth or Bones, but good ſtore of Sea-Shells. The Stratum of Clay in which they lay was not above 3 Foot below the Surface. They were neither of 'em entire, the 2 Ends of each being broken off before he ſaw them. And conſequently the thickeſt part was loſt and gone, as well as the ſmalleſt. And yet 'tis very rare to meet with an Elephant's Tooth in any part 16 Inches about. So that theſe muſt have belong'd to a very large Creature. *See the Lecture about* Ebur Foſſile.

o. 3. A leſſer Piece of the ſame Tooth.

o. 4. Several Pieces of an Elephant's Teeth dug up in a Gravel-pit at *Iſlington*, about a Furlong N. W. of the Well call'd *London-Spaw*. It lay about 8 Foot deep. There were ſeveral Bones with it.

o. 5. Part of the Thigh-Bone of an Ox, dig'd up in a Gravel-pit, in *Windſor-Park*.

o. 6, 7, 8, 9, 10. Dug up in another Gravel-pit at the ſame Park. Theſe lay about 14 Foot deep.

o. 11, 12. Found ſeven Foot deep in a Gravel-pit, near the Mill in *Windſor* Field.

o. 13. A Shank-Bone digg'd up, along with Nuts, and Branches of Shrubs, 6 or 8 Foot deep, in ſinking the Wet Dock, near *Deptford*.

o. 14. A Piece of a Bone found eighteen Foot deep in a Gravel-pit, near *Chelſea-College*.

o. 15. A ſmall Bone and 2 ſmall boney Polyhedrous Bodies, out of a Stratum of Stone, about 10 Foot deep, in a Quarry, near *Broadwell-Grove, Oxfordſhire*.

o. 16. A Fragment of the interior or porous Part of a Bone, tinged of a fine bright green Colour. Found in a Copper-Mine in *Cumberland*. Thoſe boney Bodies that are found amongſt Copper-Ores in the Earth, are frequently tinged with green or blue, the Colours that that Metal naturally gives. The Turcois Stone, as it is commonly ſtiled by Lapidaries, is no other than part of a Bone ſo tinged. See the Account of that Body in the Catalogue of the foreign Foſſils, p. - - - - - as alſo of a Bone dug up in the Copper-Mines of *Hungary*, tinged green, *ibid.* p.   and of another found lodg'd at a conſiderable depth under a Stratum of ſolid Stone, at - - - - in *Yorkſhire*, in a Letter of Mr. *Thoresby*, dated *Nov.* 9. 1702.

o. 17. A Piece of a Bone, found, among ſeveral others, in a Stratum of ſolid Stone in a Quarry near *Caple-Tar, Cornwall*. It has ſeveral Spots of green upon it, which are no other than Efloreſcencies of Copper-Ore. There were ſome ſmall Veins of Marcaſite, with a few Strings of green Copper-Ore, in the ſame Quarry: and *Caple-Tar Gold Mine*, as 'tis call'd, is not far off. See a Sample of the Marcaſite got in that Mine, in the former part of this Catalogue, p. - - - - The Stratum in which theſe Bones were lodged was above 100 Foot deep.

CLASSIS XII.

Corpora Marina, præſertim Conchylia Maſſæ lapideæ confertim immiſta.

p. 1, 2, to 10. incluſive. Ten Maſſes of a reddiſh hardned earthy Matter, containing in it Entrochi, Sea-Shells, and Impreſſions of them, Corallina, the Sea-Fan, and other like Bodies. From *Stanton, Cumberland*. Sent by Biſhop *Nicholſon*. Dr. *Plukenet*, Mr.

Stoneſtreet, Mr. *Doody*, and Mr. *Buddle*, aſſert that theſe Bodies are real. *p.* 5. has in it a Pinna of a Plant of the Fern-kind.

p. 11. Small Fragments of Shells; and a white reticular Body, appearing to be part of a Sea-Fan, in a blackiſh hardened earthy Maſs. Found by the ſides of a Brook about 50 Yards from a Farm-Houſe, called *Threpland* in *Weſtmorland.* There's more of it in the ſame Banks. Dr. *Plukenet*, and the other three Gentlemen above named aſſent alſo to this, and to what follows at *p.* 12.

p. 12. Another like Maſs from the ſame place, with part of a Sea-Fan alſo in it: and the Impreſſion of an Entrochus.

p. 13. A grey ſtoney Maſs, very hard, full of Shells, worn by the Agitation of the Sea. Found on the Shores near *Scarborough*, *Yorkſhire.* This, and the following to *p.* 22*. are not properly *Pebles*, or of the original *Nodules*, that were form'd in the Water at the Deluge, [vid. *Nat. Hiſt. Earth.* Part iv. *Conſ.* 2.] but are only Lumps of hard Stone, broken off from the Strata: their Surfaces ſmooth'd and the Bodies ground into this Form by the Sea's agitating and rolling them to and again upon the Shores.

p. 14. Another from the ſame Shores.

p. 15. Another. Found on the Shores near *Owthorn, Yorkſhire.*

p. 16. Another, from *Owthorn* Shores.

p. 17. Another, brown. From *Owthorn* Shores.

p. 18. Another, reddiſh, from *Owthorn* Shores. The Shells in this appear with a talky Gloſs: and are probably conſtituted by Talc, the teſtaceous Matter being diſſolv'd, convey'd away: and ſucceeded by this talky Spar, brought by Water paſſing the Stone.

p. 19. Another from the ſame Shores. The Shells here are conſumed and gone, and the Places of them fill'd with a white talky Spar.

p. 20. Another of a brown Colour near black. *Owthorn* Shores.

p. 21. Another. Found on the Shores betwixt *Skegneſs* and *Ingoldmells, Lincolnſhire.*

p. 22. A ſmall Maſs of a grey Stone, with two Shells of ſome Bivalve, very white, ſo worn as to appear like two C C. From the Northern Shores of *Sheppey Iſland, Kent.*

p. 22 ×. Another, very large, with ſeveral ſorts of the Bodies exhibited in the 6th Class above, *i.* 1, 2, 3, *& ſeq.* in it. *Owthorn* Shores.

p. 22 †. Another, leſs, with like Bodies in it. *Owthorn* Shores.

p. 22 *. Another, with Bodies of ſtill the ſame kinds in it. Found on the *Yorkſhire* Shores of the River *Humber*, near *Paul.*

p. 23. Part of a dark grey Stone. There were ſmall Bivalves in it; the Shells whereof, being periſh'd and gone, are ſucceeded by a ſhining braſſy Pyrites. Out of a very thick Stratum of Stone, in a Quarry near *Bakewell*, in the *Peak*, *Derbyſhire.*

p. 24. A Maſs of brown Stone, ſet extremely thick with Shells. Found in a Brook near *Northleach*, *Glouceſterſhire.*

p. 25. Another, *Clipſton-Quarry*, *Northamptonſhire.*

p. 26. Another. *Gritworth*, *Northamptonſhire.*

p. 27. Another. From the Stone-pits at *Tick-Marſh, Northamptonſhire.* This lay only a Foot deep: and 'twas taken up by Sir *John Pickering*, who obſerved them lying as thick thence to 6 Foot deep, which was the bottom of the Pit.

p. 28. A ſingle Shell taken out of the precedent Maſs.

p. 29. A Maſs of Stone very thick ſet with Shells, out of a Quarry, near *Fairford, Glouceſterſhire.*

p. 30. Another. Found in *Hoods-well-Town*, near *Richmond, Yorkſhire.*

p. 31. Another, near *Southampton.* There are amongſt Fragments of other Shells, two Valves of the Chama, lying in this open'd and diſplay'd.

p. 32. & 33. *Crick* Stone-pits, *Northamptonſhire.*

p. 34. *Ibid.* *p.* 35. *Ibid.*

p. 36. *Whitton* Shores, *Lincolnſhire.*

p. 37. A Maſs with *Conchæ Anomiæ*, lying very thick in it. *Sherborn, North Field, Glouceſterſhire.*

p. 38. Another Maſs thick ſet with various Shells, out of a Lead-Mine, near *Workſwork*, in the *Peak, Derbyſhire.*

p. 39. Another, thick with ſtriated *Conchæ Anomiæ*, ſome of them filled with white Spar. *King's-Weſton, Glouceſterſhire.*

p. 40. Another. Some of the Shells having in them likewiſe white Spar. *Gritworth, Northamptonſhire.*

p. 41. Another Maſs, holding *Conchæ Anomiæ*, in great Numbers, both of the *læves* and *ſtriatæ*, a kind of Oyſter-Shell, and other Bivalves. *Barrington* great Quarry, *Glouceſterſhire.*

p. 42. Another, out of the ſame Quarry.

p. 43. Another, wherein are various kinds of Bivalves: and a long, fair Spike of an Echinus Ovarius. Found, above 30 Foot deep, in a Quarry near *Farmington, Glouceſterſhire.*

p. 44, 45. A Maſs of Stone, broken in two, and ſhewing in it ſeveral Shells of ſome ſort of Bivalve. *King's-Weſton, Glouceſterſhire.* Sir *Robert Southwell.*

p. 46, 47. Another, likewiſe ſplit in two. In this have been many Shells; but they are much decay'd, and but juſt diſcernible. *Hinderskelf, Yorkſhire.* Mr. *Groome.*

p. 48. A Maſs of black Stone, having in it partly Shells, very thick: and partly Spar, ſucceeded into the room of Shells decay'd: and ſucceeded by a ſparry Talc. Found among the Rubble of a Coal-pit at *Adderton, Yorkſhire.* The Colliers ſay that it lay four Fathom deep, juſt over the Coal.

[A] *p.* 49. A Maſs conſiſting almoſt entirely of common Oyſter-Shells, the Intervals only being fill'd with Sand. From a Rock two Miles diſtant from the Sea and 200 Foot above it. *Weymouth.*

p. 50. *Ibid.* In this are ſeveral very different Shells, both Bivalve and Turbinate.

p. 51. *Ibid.*

p. 52. *Whitton-Cliff, Lincolnſhire.*

p. 53, & 54. Bp *Nicholſon.* From the Dioceſe of *Carliſle.* In theſe two Maſſes the Shells are very much decay'd; there remaining little more than Impreſſions of them. By ſuch as theſe Dr. *Liſter* was miſled into the Notion that Foſſil Shells were not real, but *meræ Umbræ, Imagines*, and I know not what. Vid. *Liſteri Hiſt. Animal. Angliæ, Tract.* 4. p. 243. See an Icon of this kind, *Tab.* 9. *Fig.* 49. *Conf.* p. 130. *infra.*

p. 55. A Maſs extremely thick ſet with quadrate Tubular Vermiculi marini and other ſmall Shells. *Oxenden, Northamptonſhire.* Mr. *Morton.*

p. 56. Found in the Home-Park of Sir *Ralph Dutton. Sherborn, Glouceſterſhire.*

[A] *p.* 57. A Maſs with Cochlitæ in it. *Petworth, Suſſex.* Theſe ſeem to have been moulded in the *Cochlea faſciata vivipara fluviatilis, Liſteri Hiſt. Conchyl. fluv.* N° 26. There are of this ſort in the Cliffs of *Hampſhire.* See the Catalogue of the Shells found there. N° 25.

p. 58. A ſingle Cochlites ſtruck out of the aforeſaid Maſs.

p. 59, 60, 61, 62. Maſſes of Stone, out of *Portland* great Quarry. The Stratum off which theſe were broken, lay 50 Foot deep, about 200 Foot above the Sea. They are thick ſet with Stones, of the ſame Conſtitution with that of the common Stratum, caſt chiefly in long ſlender turbinated Shells, and in that Bivalve that Dr. *Plot*, Nat. Hiſt. of *Oxfordſhire,* calls *Hippocephaloides.* The Shells are all periſhed, but the Space they poſſeſs'd, is left empty, except where accidentally fill'd ſince.

[A] *p.* 63. A Maſs, wherein are ſeveral of the common Pecten, or Eſcalop-Shells. From ----- *Northamptonſhire.*

p. 64. A Maſs of a brown Colour, with Shells, and ſeveral Belemnitæ in it. Some of the Belemnitæ are broken ſo as to diſcover the Striature and Texture of their Cruſts. *Gritworth, Northamptonſhire.*

p. 65. Another, with Shells and Belemnitæ. *Ibid.*

p. 66. Another, *Ibid.*

p. 67. Another, with Shells, and a piece of Wood, being part of the Branch of ſome Tree. *Ibid.*

p. 68. A Maſs, extremely thick ſet with various kinds of Shells, and Fragments of Shells. Out of a Gravel-pit near *Oxenden-Church, Northamptonſhire.* Mr. *Morton.*

p. 69. A Maſs with *Aſteriæ*, thoſe call'd the Wires, of this Body, and various Kinds of Shells. *Oxenden* Gravel-pit. Mr. *Morton.*

p. 70. A Maſs with ſeveral fair Shells in it, of different Kinds. I have a Drawing of it, by Mr. *Faithorn*: But ſince that was made, the Maſs was accidentally broke in two, by a Fall, and one or two of the Shells ſhatter'd and defac'd. Out of a Stone-pit on *Cowley-Common* near *Oxford.*

p. 71. A Maſs of Stone having great Variety and Plenty of Shells, chiefly Bivalves with ſome turbinated, and Ova of Fiſhes in it. Found upon the plough'd Lands, on the Brow of a Hill in the Fields, on the Weſt-ſide of *Sherborn, Glouceſterſhire.*

p. 72. Another, as thick ſet with Shells, Bivalves, turbinated, Echini, and Ova. *Windruſh, Glouceſterſhire.*

p. 73. Another. *Stawel, Glouceſterſhire.*

p. 74. Another, this was part of a Stone ſtruck out of a Wall near Sir *Ralph Dutton*'s Houſe, *Sherborn, Glouceſterſhire.*

p. 75. Another, with Ova of Fiſhes, and ſeveral very fair and beautiful Shells, both Bivalve, and Turbinate. From a Quarry near *Windruſh, Glouceſterſhire.* I have a Drawing of this, by Mr. *Faithorn.*

p. 76. Another Maſs, thick ſet with Shells of the Bivalve kind. *Hampnet, Glouceſterſhire.*

p. 77. Another, exhibiting two fair Valves. *Northleach, Glouceſterſhire.*

p. 78. A Maſs thick ſet with Variety of very fair Shells. Found in *Woodſtock-Park, Oxfordſhire.*

[A] *p.* 79. A Pyrites, very thick ſet with ſmall or young Shells of that ſort of Bivalve that Dr. *Liſter, Hiſt. Animal. Angliæ. p.* 173, calls *Choncha è maximis, admodum craſſa, rotunda, ex nigro rufeſcens.* And large grown Shells of this Kind are found plentifully in the ſame Pits. *Conf.* N° *f.* 433. *& ſeq.* Thoſe contain'd in this Pyrites, are all of much the ſame Bigneſs; and ſomething exceed a large Pea: To which Size Mr. *Haſtings* aſſures me, the young of this Species of Shell-fiſh naturally arrives at the End of *May.* So that theſe were kill'd, and a Stop put to their Growth at that time of the Year; which is the time aſſign'd by *Moſes* for the breaking forth of the Deluge. This Maſs was found in the great Clay-pit by *Richmond-Wells, Surrey.* Mr. *Doody.* All that I have ever ſeen of this Species that are under a Year's Growth, are of the Size of theſe. I have met with great Numbers of ſuch in theſe Pits.

p. 80. A gritty Maſs, having in it a fair Pectunculus, and part of another. This, and the following, to p. 86 incluſive, were given me by Mr. *Jackſon. vid.* c. 29. *ſupra.*

p. 87. Found in ſinking a Well at *Bromly* in *Kent.* Mr. *Emmet.*

p. 88. A Maſs of grey Stone, part of a Stratum near the Road, at the Weſt-end of *Stifford,* a little of this ſide the Rivulet, *Eſſex.* The following Maſſes to *p.* 102 incluſive, were all parts of the ſame Stratum, and contain in them a great Variety of Shells, both Bivalves and Turbinate, generally well preſerv'd, this Stone being ordinarily very firm and hard: and in breaking this Stone, I once obſerv'd a Shark's Tooth very fair and entire.

p. 89. *Ibid.* *p.* 90. *Ibid.* *p.* 91. *Ibid.* *p.* 92. *Ibid.*

p. 93. *Ibid.* In this, one or two of the Shells have Delineations of Shrubs, made on them by the aſcent of fuliginous Steams.

p. 94. Other like Delineations very fair. *ibid.*

p. 95. *Ibid.* *p.* 96. *Ibid.* *p.* 97. *Ibid.*

p. 98. *Ibid.* There are fuliginous Delineations on the Shells of this likewiſe.

p. 99. *Ibid.* This has in it ſeveral large flat Shells which lie parallel one to another, and to the Grain, and Horizontal Situation of the Stone. The ſame is obſervable in ſeveral of the preceding, and in the 3 following Maſſes.

p. 100. *Ibid.*

p. 101, 102. Theſe, tho' very large, cohered to each other, 'till broken aſunder, and parted. *Ibid.* I have obſerv'd of the ſame ſorts of Shells with thoſe in this *Stifford* Stone, in the great Sand-pit near *Woolwich*; and in another Sand-pit at the Foot of *Shooter*'s-*Hill*, as alſo in ſeveral parts of *Black-Heath*. And Mr. *Derham* ſent me ſeveral pieces of Stone, not unlike this; in which alſo were of the very ſame ſorts of Shells, found five or ſix Foot deep, in digging a Ditch at *Orſet*, which is about 3 Miles Eaſt of *Stifford*. So that 'tis very likely they were in ſo great Numbers diffuſed over all that Tract of Land from *Woolwich* and *Black-Heath* to *Orſet*, for almoſt 20 Miles in length.

p. 102^{x}. A piece of the harden'd Marl, as it is called by Dr. *Hatley*. He has given an Account of it, *Philoſ. Tranſ.* N° 155. *p.* 463. as compoſing a *Floor* or *Layer*, about an Inch in thickneſs; having in it Shells and Impreſſions of both the bivalve and turbinate Kind. *Hunton, Kent.*

* * *

De ingenti Rerum Marinarum, in eodem Loco, Telluris Viſceribus commiſſarum, Numero, & Diverſitate,

MANTISSA PRIMA.

Sive Conchyliorum quorundam in Agro Hantonenſi erutorum,

CATALOGUS.

PRÆFATIO.

Exhibet brevis iſte Catalogus amplam Conchyliorum Meſſem ex Agro Hantonenſi reportatam. Tanta eorum Varietas, tot Species, imo & Genera tam longe diverſa, omnia, ſi non in eodem Loco, in eadem certe Vicinia congeſta, aliquam primo ſaltem intuitu Admirationem incutiant: eoq; majorem quod Numero adeo ingenti Species ſingulæ tantaq; Copia eruuntur. In nonnullis etenim Stratis ita abundant ut an Materiam Terreſtrem, cui committuntur, mole non ſuperent, merito dubitandum videatur. Quæ tamen Admiratio ceſſabit prorſus & evaneſcet quum Conchylia, non ſolum in hac noſtrâ Inſulâ, ſed in omni alia Telluris Regione, eſſe reperta, idq; non minori Copia, etiam in Locis Mediterraneis & à Mari longiſſime diſſitis, notum ſit.

Conchyliorum, Telluris Viſceribus erutorum, Numerus, & Varietas.

*Quouſq; in Telluris Viſcera pertigerunt hæc cæteraq; Maris Spolia, nondum eſt compertum. Ea verùm reperiri ad maximam uſq; Profunditatem, quò uſpiam fodiendo pervenitur, certum eſt. Neq; in Terræ, in Margæ, aut arenæ Stratis frequentiora ſunt quam in ſaxi, etiam duriſſimi. Hujus Rei Documenta Plura, & Exempla, alio Loco * propoſui. Et quum Stratis ſaxeis, aliiſq; etiam duriſſimis, eodem plane modo commiſta ſunt, atq; arenaceis & reliquis laxioribus, Saxea illa, cæteraq; itidem olim laxa fuiſſe atque ſoluta liquido conſtat. Reperiuntur quoq; Conchylia in Montibus, & ad Summa, etiam altiſſimorum, Faſtigia atq; Vertices; idq; per totum Telluris Orbem; certo Indicio Conchylia hæc omnia fuiſſe allata, ſtrataq; compilata, à Diluvio univerſali.*

Inveniuntur in Fodinis profundiſſimis, æq; ac in Summis Montibus.

Strata, quibus committuntur, tum Terreſtria, tum Saxea, congeſta à Diluvio.

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* Vid. *g.* 4, 12, 13, 14, 15, in the Catalogue of the additional extraneous *Engliſh* Foſſils.

Horum

De Hantonenſibus Relatio particularis.

Horum noſtrorum Hantonenſium Pars maxima è Clivis Milfordianis & Hordwellianis eruebantur. Reperiuntur quoq; exinde perplura Stadia verſus Chriſt-Church; *quam longe ulteriùs, aut per Littora, aut per Mediæ Regionis Viſcera, diligentiore facto ſcrutinio patebit. Hoc certum eſt Conchylia in aliis Regionibus, pari numero, & varietate, detecta eſſe per multa ubiq; Paſſuum Millia. Clivi iſti Hantonenſes in locis nonnullis editiſſimi ſunt: eorumq; ſtratis commiſſa viſuntur Conchylia per plures deorſum Orgyas ad uſq; Maris ſuperficiem; profundiùs inquirendi nulla ſeſe obtulit occaſio. Strata hæc, tum ſaxea, tum quoq; arenacea, cæteraq; omnia, ſibi invicem parallela jacent, & ab horizontali ſitu parùm declinantia. Ex ſtratis, Maris Æſtuum & Procellarum Vi, pulſa, quo modo de ſuccino alibi*[*] *notavi, Conchylia paſſim in Littore diſperſa comparent.*

Conchylia quomodo tam diu conſervata.

Neq; cuipiam mirum videatur tot Marinorum Animantium Exuvias, per tam multa ſæcula, ad noſtra uſq; Tempora, integras & illæſas fuiſſe conſervatas, ſi ſtratorum quibus indantur natura & indoles penitiùs aliquantùm conſideretur. Arena enim, & Marga, cum tenuiſſimæ ſunt, ita ſe ad Conchylia accommodant & applicantur, ut hæc muniant, contra externas injurias omnes protegant, tutaq; reddant. Saxum autem heic firmiſſimum eſt: omnemque, ut aliarum Rerum nocentium & corrumpentium, ita Aeris & Pluviarum acceſſum omnino prohibet.

Inter Hantonenſium reliqua Conchylia plura ab Occidente & America.

Cataclyſmus, Britanniam inundans, ab Occidente.

Ex his Hantonenſium Conchyliis varia Anglicana ſunt, tum marina, tum quoq; fluviatilia. Nonnulla vero ſunt ignotæ Originis; quippe quæ Pelagia ſunt, & intima profundiſſimorum Marium loca incolunt, nunquam Littora aut Telluris Viciniam appropinquantia; de quibus fuſiùs egi in mea Reſponſione ad Cl. Camerarium, p. 10. *& ſeq. Multa deniq; ſunt Americana; nec ullibi marium hodie viva reperiuntur niſi in iis quæ Americanorum Oras alluunt. Nulla autem inter hæc extant ab Oriente prolata: Hoc magis notatu dignum cenſeo, quod inde Exundationem, quæ hanc noſtram inſulam ſubmerſit & operuit, veniſſe ab Occidente manifeſtum ſit. Haud equidem me latet, inter has tam varias Conchyliorum Species, unam ſupereſſe,* N° 53. *Notatam, quæ ab illa quam Doctiſſimus Rumphius in Hiſtoria Naturali Amboynæ*[†] *exhibuit, parum abludit. Sed hæc noſtra, quantumvis ſimilis, non ejuſdem omnino Speciei eſt cum Amboynenſi illa. Nec equidem ſi ejuſdem fuiſſet Speciei quidquam certè inde revera circa hujus noſtræ Originem erat concludendum, quum aliquæ ſunt Teſtæ & Americæ & ſimul Indiæ orientali communes: atq; in utraq; illâ quantumvis diſtanti Regione, hodieviventes obſervantur.*

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[*] Nat. Hiſt. of the Earth. Part IV. *ſub finem.*

[†] Pag. 96. Tab. XXIX. F.

Hantonenſium Conchylia quædam perforata à Purpura Maris Americanorum Incolâ.

Purpura Piſcis Linguam habet in Aculeum Oſſeum durum acutum deſinentem. Hoc autem Aculeo, tanquam Terebra quadam, Conchyliorum Teſtas perforare ſolet, & Piſcibus incluſis per Foramina ita facta extractis, veſci. Inter has Teſtas Hantonenſes quaſdam ita perforatas obſervavi; cujus Rei Exemplum habemus in Sphondylo,* N° 7. *Et, quod obiter notandum duxi, ejuſdem Speciei Sphondylum habeo, cum plurimis aliis Conchyliis, mediâ Virginiâ, Americæ Regione, Effoſſum. Frequens eſt Purpura in Americanorum Mari: & ab hoc Piſce perforatæ Teſtæ paſſim comparent in eorum Littoribus. Sed neq; ipſe Piſcis in Mari Britannico, nec ab eo perforatæ Teſtæ in Littore, unquam viſuntur; quo liquet tales origine Americanas eſſe poſſe, nequaquam Britannicas, ad quantamcunq; in Tellure Britannica Profunditatem jam ſepultæ lateant & recondantur.*

De Conchyliorum Deſcriptione & Characteriſmis Apologia.

Unum adhuc monendum reſtat, ut ſi quid in ſequenti horum Conchyliorum Deſcriptione, & Characteribus concinnandis peccatum cenſeant elegantiorum Literarum ſtudioſi, à me, Veſtigia Liſteriana† *preſsè nimis inſiſtendo, hoc non mihi vitio vertendum; quum hujus Viri, tam docti, & Naturalis Hiſtoriæ Conchyliorum Indagatoris tam diligentis, ſcripta ab Eruditis omnibus probentur, ejuſq; de his Rebus Authoritas adeo rata ſit & ſancita ut quaſi Veri & Recti Norma ab omnibus jam denuo recipitur.*

P.S. *Per mediæ Regionis Viſcera, &c.*] *Per totam hanc Regionem, circa Limington, imo in omnibus ferè Locis Novi Saltus,* [the New-Foreſt] *paſſim viſuntur Fodinæ è quibus Marga eruitur. In his ferè omnibus, ſimul cum Marga, Conchylia Marina Copioſe Effodiuntur.*

Una cum Conchyliis in Agro Hantonenſi, reperiuntur etiam Vertebræ, & Dentes Piſcium Marinorum; de quibus, Vid. n. 9^c. *ſupra, &* N° 64. *infra.*

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* Vid. quæ de hac re ſcripſi in *Reſponſ. ad Camerar.* p. 88, 99. and in the *Catalogue of the foreign extraneous Foſſils*, pag. 88, N° δ. 121.

† Mart. Liſteri Hiſt. Conchyl. Fol. Lond.

Con-

Conchyliorum quorundam Marinorum, è Terræ Viſceribus, in Agro Hantonenſi, erutorum,

CATALOGUS.

Cap. I. *Bivalvia.*

1. Pecten, parvus, Auriculis ex altera parte majoribus.
2. Oſtrei ſulcati, Arborei vulgo dicti, Species.
3. Oſtreum arboreum alterum, crebriùs ſulcatum.
4. Oſtreum parvum, læve, minime ſulcatum.
5. Oſtrei cujuſdam oblongi teſta inferior ſeu plana, ſuperficie exteriore ad tactum aſperâ.
6. Oſtreum ut videtur, Sylveſtre Rondeletij.
7. Oſtreoides craſſa, rugoſa, vertice in utraq; Teſta recurvo. Hujus Speciei Conchylia Oſtreoidea effodiuntur etiam in Virginia. Vid. *Catalogue of the additional foreign extraneous Foſſils.*
8. Pectunculus, è Polyleptoginglimis Liſteri, ambitu rotundo, creberrime ſtriatus.
9. Alter ejuſdem generis minor, ſtriis rarioribus.
10. Alter minor, ſtriis crebrioribus.
11. Pectunculus Polyleptoginglimos, formâ oblongâ, Muſculus Matthiolo dictus, tenuiter ſtriatus.
12. Pectunculus lævis, parvus admodum, ambitu rotundo.
13. Pectunculus lævis alius, parvus, ex alterâ Parte paulò productior.
14. Pectunculus tenuiter faſciatus, vertice multum recurvo.
15. Pectunculus minimus faſciatus.
16. Pectunculus, exiguus, profundiùs ſulcatus, aſper.
17. Lapis Telliniformis, cujus ſuperficiei Reliquiæ quædam Teſtæ nitidæ adhærent.
18. Tellina, parva, lævis.
19. Tellina altera, minuta, tenuiter faſciata.
20. Tellina faſciatim profunde ſulcata, altera parte in Angulum excurrente.

Cap. II. *Conchylia, Teſtâ ſimplici, non tortilia.*

21. Dentale gracile, & læve, noſtrate longius. Horum Aliqua, Mucronem verſus, aliquantulum ſtriata ſunt.
22. Patella Ambitu rotundo, ſepto quodam intus ſinum exiguum includente.
23. Patella quædam, ut videtur, admodum compreſſa.

Cap. III. *Tortilia, ſeu Turbinata.*

24. Cochlea umbilicata, Claviculâ brevi.
25. Cochlea, minor, non umbilicata, Claviculâ productiore. Videtur hæc eſſe *Cochlea faſciata vivipara fluviatilis, Liſteri,* Hiſt. Conchyl. fluviat. N° 26.

26.

26. Fragmenta Cochleæ cujuſdam, Formâ compreſſâ.

27. Cochlea ſtriata, Claviculâ longiſſimâ, Orbibus tumidioribus, ſeu pulvinatis.

28. Cochlea ſtriata, Claviculâ longiſſimâ, Orbibus planis ſeu minus eminentibus.

29. Cochlea minima, lævis, Claviculâ longiſſimâ.

30. Cochlea lævis, Claviculâ longâ, Ore pyriformi, Teſtâ tenuiſſimâ. Tenuitas, cæteraq; hujus Teſtæ Indoles, arguit eam eſſe ex fluviatilium vel lacuſtrium Claſſe oriundam.

31. Cochlea parva, ſtriata, Claviculâ modicè productâ, ore pyriformi, Columellâ dentatâ.

32. Trochus Pyramidalis, Baſi planâ, Tuberculis minimis obſitus.

33. Concha Veneris, ore anguſto, utrinq; dentato.

34. Rhombus, Cylindraceus, tenuis.

35. Rhombus Cylindro-Pyramidalis, parvus, aſper, Claviculâ modicè productâ.

36. Buccinum, Muſicum dictum, Columellâ dentatâ, ad Claviculam muricatum.

37. Buccinum, Muſicum minus, non muricatum, labro dentato.

38. Buccinum Claviculâ longiſſimâ, Tuberculis obſitâ, ore ſubrotundo.

39. Buccinum, minimum, aſperum, Claviculâ longiſſimâ, ore anguſto.

40. Buccinum Claviculâ longâ, ſtriatum, ore oblongo anguſto.

41. Buccinum cancellatim tuberculatum, Claviculâ & Roſtro modicè productis.

42. Buccinum læve, Claviculâ longiſſimâ, Orbibus planis.

43. Buccinum læve, Claviculâ modicè productâ, orbibus tumidioribus.

44. Buccinum parvum, ſecundum Orbes ſtriatum, Roſtro brevi, ore ſubrotundo.

45. Buccinum, parvum, tenuiter ſtriatum, ore anguſto.

46. Buccinum, parvum, ſecundum Orbes ſtriatum, tranſverſim ſulcatum, Roſtro brevi.

46^{x}. Buccinum, parvum, Roſtro & Claviculâ brevibus, primo Orbe tranſverſim leviter ſulcatum, & ad Claviculam depreſſum.

47. Buccinum læve, Claviculâ & Roſtro brevibus, primo Orbe ad Claviculam depreſſo.

48. Buccinum Tuberculis obſitum, Roſtro brevi, labro duplicato.

49. Buccinum læve, Claviculâ & Roſtro longis, ad Claviculam muricatum.

50. Buccinum, ſtriatum, Claviculâ longâ, inconcinna, ſeu Orbibus inæqualibus.

51. Buccinum Claviculâ & Roſtro longis, ſecundum Orbes ſtriatum, tranſverſim ſulcatum.

52. Buccinum, craſſum, læve, Claviculâ & Roſtro longis, Orbibus ſingulis ad Claviculam in Angulos acutos depreſſis.

53. Buccinum Claviculâ & Roſtro longiſſimis, ſtriatum, Tuberculis in medio quoq; Orbe aſperum.

54. Buccinum Claviculâ & Roſtro longiſſimis, minus, cancellatim ſtriatum.

55. Buccinum Claviculâ & Roſtro longis, parvum, ſecundum Orbes ſtriatum, tranſverſim ſulcatum.

56. Buccinum, parvum, Claviculâ longiſſimâ, ore longo anguſto, ſecundum Orbes tenuiſſime ſtriatum, tranſverſim ſulcatum.

57. Buccinum, parvum, Claviculâ longâ, tenuiſſime ſecundum Orbes ſtriatum.

58. Buccinum, parvum, Claviculâ & Roſtro longis, Orbibus ad Claviculam tuberculatis.

59. Buccinum magnum, Claviculâ longâ, cujus Orbes plani ſunt, & minime pulvinati, labro latiſſimo, & uſq; ad Apicem Claviculæ producto.

60. Buccinum Claviculâ & Roſtro longis, primo Orbe in Limbum acutum, juxta Claviculam, excurrente.

APPENDIX. 1722.

61. Buccinum juxta Orbium Ductum ſtriatum, & muricatum, Claviculâ & Roſtro brevibus.

62. Buccinum cancellatum.

63. Buccinum Echinatum.

64. 3 Gloſſopetræ, 5 Canum Marinorum Dentes.

APPENDIX *alter*. 1724.

65. Oſtrei cujuſdam Valvula ſuperior.

66. Oſtrei forſan Anglici, Valvula inferior.

67. Pectunculus.

68. Teſtudinis, alicujus Americani, Teſtæ Segmentum, Effoſſum ex Clivo Hordelliano.

⁂

Rerum

Rerum aliquot Foſſilium in Itinere Septentrionali D. GROOME *&* D. MEULIS *Anni* 1700. *Collectarum,*

MANTISSA ALTERA.

Exhibens Conchylia Marina varia in Summorum Montium Pendle, Ingleborow & alior. verticibus: in profundiſſimis Fodinarum latebris: & ex Agris Nunnington, Bugthorp, aliiſq; à Cl. V. M. Liſtero recenſitis in Lib. de Conchitis, & in Actis Philoſ. N° 76.

p. 103. A Piece of grey Stone, with ſeveral Impreſſions of ſtriated *Conchæ Anomiæ* in it. Found on the very Top of *Pendle-Hill*, about 20 Yards North of the Beacon. This is the common Stone of the Hill; in all which there are like Impreſſions in great Numbers.

p. 104 *&* 105. Two Pieces of Stone, each having the Impreſſion of a pretty large *Bivalve* upon it. Theſe were taken, from amongſt many more with ſuch Impreſſions, out of Stone, within a few Yards of the Top of *Pendle-Hill.*

p. 106. A Piece of Stone, with the Shell of a pretty large *Bivalve* upon it, and Joints of many ſmall *Entrochi* in it. Struck out of the Rock, within 60 Yards of the Top of *Ingleborow-Hill*; in which theſe Marine Bodies are pretty plentiful.

p. 107 *&* 108. Two ſmall Pieces of the ſame Stone, each with the Impreſſion of a *Bivalve* upon it. From the ſame Rock.

p. 108^{x}. A Piece of Stone, from ſtill the ſame Rock, with a great many *Entrochi* in it, and the Impreſſion of a Shell of a *Bivalve* upon it.

p. 109 *&* 110. Two Maſſes of Stone, very thick ſet with Shells, and *Entrochi*, broke off the very Top of a Rock, about 20 Yards in perpendicular Height, near *Engleton* in *Yorkſhire*. All the Rocks thereabouts are pretty thick ſet with Shells; but few of them fair, or ſo well preſerv'd as they are commonly found in ſome other Countries.

p. 110^{x}. Another like Maſs; from the Top of the ſame Rock.

p. 111. A Maſs with ſeveral Shells, and two very large, in it. Found, amongſt many more of like ſort, on a Hill by the Allum-Mines, at *Kirby on the Brow*, *Yorkſhire*.

p. 112. Another, with Shells and Impreſſions. Found on the ſide of *Hildern-Hill*, near *Scarborough*, *Yorkſhire*.

p. 113. Impreſſions of ſeveral ſulcated *Conchæ Anomiæ*, on Stone; found on the Eaſt-ſide of *Hackneſs-Head*, a high Hill, near *Scarborough*, *Yorkſhire*.

p. 114. Impreſſions of Eſcalop-Shells. Found near the former.

p. 115 & 116. Two Maſſes, very thick ſet with Shells, out of a Stone-pit at the top of *Hackneſs-Head*. All the Stone in this Pit, and about the Hill, is very full of Impreſſions, and of Shells, tho' few fair, or well preſerved.

p. 117. A Piece of Stone, with the common Oyſter-Shell in it, taken out of a Stone-pit at the Top of a high Hill near *Silfoe*, *Yorkſhire*.

p. 118. Impreſſions of various Kinds of *Bivalves*, on Stone. Found in *Silfoe-Gill's*, *Yorkſhire*.

p. 119. A Maſs of Stone, full of Shells. Found under the Moſs-Earth, amongſt others of like ſort, at the very Top of *Suffield-Hill*, which is very ſteep and high. 'Tis not far from *Hackneſs*, *Yorkſhire*.

p. 120, 121. Two Maſſes, very full of Shells. Found on the Top of a high Hill, near *Silfoe*, *Yorkſhire*. There lie of theſe looſe Maſſes of Stone, immediately under the Turf-Earth, great Numbers. They are laid bare by the Diggers in the Turf-pits.

p. 122. Found in the Road near *Pickering*. A *Strombites*.

p. 123. Found at the bottom of *Nunnington-Quarry*, *Yorkſhire*. A *Nautiloides*.

p. 124. A Stone, thick ſet with Ova of Fiſhes; having likewiſe part of the Shell of a *Pecten* adhering to it; but neither ſo fair as commonly they are found in many other Countries. From the bottom of the ſame Quarry.

p. 125. An Impreſſion of a *Bivalve*, on Stone. From the ſame Quarry.

p. 126. Part of an *Ammonites*. From the Bank of the River, near *Bugthorp*, *Yorkſhire*.

p. 127. A Coarſe Spar, in form of a *Tellina*, very large. From the Bank of the ſame River.

p. 128. A Maſs of Stone, having had ſeveral Shells in it, which are now periſhed and gone: but their Impreſſions, and the void Spaces they heretofore fill'd, are very obſervable. Found near the Top of a high Hill, two Miles Weſt of *Stokeſly*, *Yorkſhire*.

p. 129. The Impreſſion of a large Shell, on Stone, very thick ſet with *Entrochi*. From *Thorp-Edge*, *Richmondſhire*.

p. 130. Some ſlight Remains of Shells, and Impreſſions, ſeeming to be of that ſort which Dr. *Liſter* calls *Pectinites Membranaceus, densè ſtriatus*. Hiſt. Animal. Angl. Pag. 243. Tab. 9. Tit. 49. Found in the Rubbiſh of a Lead-Mine of Col. *Byerly*, on *Richmond-Moore*. Conf. p. 53, 54. *ſupra*.

p. 131. An Impreſſion of a *Bivalve*. Found looſe on the ſide of a high ſteep Hill, near *Mask*, *Yorkſhire*.

p. 132. A Maſs of Stone, with Shells and Impreſſions. Found near *Newcaſtle upon Tyne*.

p. 133. Impreſſions of two *Bivalves*, on a Piece of black Stone, with ſmall Sparks of *Micæ* in it, being Part of a Stratum of Chiver that lay 71 Yards deep, at the bottom of a Lead-Mine, (farm'd by Mr. *Langſtaff*,) on *Moulderſide-Hill*, *Arkendale*, *Yorkſhire*.

p. 134. A Piece of the ſame ſort of Stone, with the Impreſſion of a large *Bivalve* upon it. Found at the ſame Depth, in the ſame Mine.

p. 135. Part of a blackiſh ſtoney Nodule, with Impreſſions of ſeveral *Bivalves* upon it. It lay 40 Fathom deep in a Coal-pit at *Benwell* Coalery, near *Newcaſtle*.

p. 136. Part of Stone of an Iron-grey Colour, with extreme ſmall Sparks of *Micæ* in it, and an Impreſſion of two ſmall *Bivalves* upon it. Found likewiſe 40 Fathom deep, in the ſame Coal-pit.

p. 136^{x}. An Impreſſion of a *Bivalve* upon a very hard brown Stone, being part of a Stratum that lay 40 Fathom deep, in a Coal-pit in *Benwell* Coalery, by *Newcaſtle*.

p. 136*. An Impreſſion of a *Bivalve*, of a Species different from the foregoing, upon a dark grey Stone; the Stratum of which lay ſomewhat deeper than the former, in the ſame Pit. There were many more Impreſſions, in both this and the above-mention'd Stratum.

De Teſtis aliiſq; Animalium Marinorum Partibus incerti Generis,

MANTISSA TERTIA.

p. 137. Part of a teſtaceous Body, with Fibres running diametrically croſs it, in manner of the *Pinna Marina*. From the great Chalk-pit at *Greenhithe*, *Kent*.

p. 138. Another. From the great Chalk-pit at *Northfleet*, *Kent*.

p. 139. Another. *Greenhithe*, *Kent*.

p. 140. Another. *Northfleet*, *Kent*.

p. 140^{x}. Another. *Purfleet*, *Eſſex*.

p. 141. Another. From a Chalk-pit, not far from *Epſom*, *Surrey*.

p. 142. Another. From a Chalk-pit near *Croydon*, *Surrey*.

p. 143. Another. From a Chalk-pit near *Charleton*, *Kent*.

p. 144, 145. Two others. From a Chalk-pit near *Rygate*, *Surrey*.

p. 146, 147, 148. Three Pieces. *Northfleet*, *Kent*.

p. 148^{x}. A large Piece of a Body of the ſame Kind, as alſo ſeveral ſmaller Pieces, immers'd in a black Flint. Found betwixt *Northfleet* and *Greenhithe*, *Kent*.

p. 149. A Piece of another. From a Stone-pit on *Bullington-Green*, near *Oxford*. Mr. *Lhwyd* ſent it with the Name of *Trichites Plotij Hiſt. Oxon. Veneris Crines forſan Plinio.* Theſe two Writers, Dr. *Plot*, of meer Simplicity, and Mr. *Lhwyd*, of Deſign, *darken Council by Words*; Job xxxviii. 2.

p. 150. A ſmall Piece, ſtruck out of a Stratum of Stone, in *Burlip-Hill*, betwixt *Cirenceſter* and *Glouceſter*.

p. 151. A Piece, leſs, and thinner; out of a Stone-pit, near *Riſington*, *Glouceſterſhire*.

p. 152. An Impreſſion of a Fragment of this Body, in a grey Flint, *Hampſtead-Heath*.

p. 153. An Impreſſion, ſeeming to be of that part of this ſort of Body where the Valves are, on a Flint. Found near *Dulwich*, *Surrey*.

p. 154. A Piece of a Shell, thick ſet with ſmall *Papillæ* all over the Outſide of it. From the great Chalk-pit at *Greenhithe*, *Kent*.

p. 155. Three or four ſmall oblong boney Bodies, lying parallel to each other, on a Piece of Chalk. *Northfleet*, *Kent*.

p. 156, 157, 158. Three Bodies, with Sulci and Ridges alternately on the Surfaces, ſo as very much to reſemble Segments of *Ammonitæ*, only one of them is ſtreight; and the other two, tho' ſomewhat inflected, not near ſo much as the *Volutæ* of the *Ammonitæ*. The ſtreight one is parted at a Suture, and exhibits a Diaphragm, unequal, and like thoſe of that Body. *Falkſtone-Cliffs*, *Kent*.

p. 159. An oblong round Body, incircled with annular Ridges and Furrows alternately. This is one of thoſe Bodies that are call'd, tho' improperly, *Screw-Stones*. From a Lead-Mine, near *Workſworth*, in the *Peak*, *Derbyſhire*.

p. 160. Six, leſſer. From the ſame Mine.

p. 161. A Maſs of Stone, with ſeveral of theſe Screws, and a pretty large Shell of a *Bivalve* in it. From the ſame Mine.

p. 162. From the ſame Mine.

p. 163. From the ſame Mine.

p. 164. Seven Screw-Stones. *King's-Weſton*, *Glouceſterſhire*.

p. 165, to 171. Incluſive. Seven Maſſes of Stone, with Screws in them. *Ibid.*

p. 172. Another, with the Screw in it, ſeeming to be compreſt by ſome external Force. *Ibid.*

p. 173, 174. Two Screws, taken out of the Stone of the eleventh Stratum of one of Col. *Byerly*'s Lead-Mines, on *Richmond-Moore*. They were pretty thick in the Stone of this Stratum, which lay about 30 Foot deep.

p. 175. A Piece of the Stone of this Stratum, with Screws in it.

p. 176. A Limeſtone, of a grey Colour, and very hard; having in it ſome ſmall *Entrochi*, and ſeveral Screw-Stones. From *Overton*, in *Scarſdale*, *Derbyſhire*.

p. 176^{x}. A Screw-Stone; found, along with *Entrochi*, at *Moreland*, in *Weſtmorland*. Dr. *Nicholſon*, now Lord Biſhop of *Carliſle*.

De Conchyliis Foſſilibus aliqua Injuria affectis, quippe attritis, eroſis, compreſſis;

MANTISSA QUARTA.

SECTIO I.

Conchylia Maris æſtu & agitatione antequam Maſſæ Saxeæ mandarentur abraſa attritaque.

p. 177. This, and the four following, were given me by Mr. *Jackſon*. Vid. *c.* 29. *ſupra.*

p. 178. Mr. *Jackſon.* *p.* 179. Mr. *Jackſon.* *p.* 180. Mr. *Jackſon.*

p. 181. Mr. *Jackſon.*

p. 182. Out of a Maſs of Stone, in a Quarry near *Burford, Oxfordſhire.*

p. 183. Out of a Stratum of Stone, in *Burlip-Hill, Glouceſterſhire.*

p. 184. Found in a Stratum, conſiſting chiefly of Sea-Shells of various Kinds; ſome of which were worn, as this is, underneath a Stratum of ſolid Stone, above 40 Foot deep, in the great Quarry at *Barrington, Glouceſterſhire.*

p. 184ˣ. From a Stone-pit, near *Abbington, Berkſhire.*

p. 184*. Out of a Maſs of ſhatter'd lax Stone, in a Quarry in *Tangly-Fields, Oxfordſhire.*

SECTIO II.

Conchylia antequam Saxo committerentur à Vermibus eroſa.

p. 185. This Maſs was very large, and had many Shells in it, of which none had the leaſt Sign of being eroded, beſides this Patella. Mr. *Jackſon. Conf.* N° *c.* 29. *ſupra.*

p. 186. *Barrington.* Found in the ſame Bed of Shells with *p.* 184. *ſupra.* I ſaw but one, beſides this, that had any Marks of theſe Depredations upon it; tho' I examin'd great numbers of them.

p. 186ˣ. Out of a Maſs of Stone, very cloſe and compact, but with Vitriolic Salts in it, which began a little to yield and ſhoot, ſo that the Stone ſhatter'd to pieces in breaking, and the Shell was eaſily got forth and clear of it. Theſe Salts would annoy and offend any Inſect that ſhould attempt preying upon the Shell whilſt in it: beſides 'twas ſo cloſely beſet with Stone, that none could well come at it. So that the Eroſions that are in this Stone were made before the Shell was repoſited in the Stone. *Gatcomb, Glouceſterſhire.*

SECTIO III.

Conchylia à vi quadam externa compreſſa & diſtorta.

p. 187. From a Stone-pit near *Appleby, Lincolnſhire.* Mr. *Morton.*

p. 188. *Concha anomia.* Out of a Maſs of Stone in *Randcomb-Park, Glouceſterſhire.*

p. 189. Out of a Stratum, made up chiefly of Ova of Fiſhes, and various Sea-ſhells, lying 12 Foot deep. *Sherborn, Glouceſterſhire.*

p. 190. Out of a Maſs, of like ſort, on *Shotover-Hill, Oxfordſhire.*

p. 191. Out of a Stratum of Stone 24 Foot deep, in *Hampnet* Quarry, *Glouceſterſhire.*

p. 192. A Pyrites, formed in a turbinated Shell, compreſs'd. From the Cliffs near *Minſter*, in *Sheppey-Iſland, Kent.*

p. 193. A grey Flint, form'd in the Shell of a galeated Echinus that was compreſs'd and broken, the Marks of which are apparent upon the Flint. Found on the Downs, near *North-Tudworth, Wiltſhire.*

CLASSIS XIII.

Foſſilia incognita.

Moſt of the Bodies of this Claſs were collected when firſt I entered upon theſe Searches: and the following Deſcription of them, drawn up when I was not much vers'd in theſe Studies. Since that, Obſervations that I have made on other like Bodies, that I have found, have convinc'd me that ſeveral of theſe belong to the vegetable Kingdom. Thoſe Obſervations are ſet forth in the Deſcriptions of the Bodies in the *Catalogue of the additional extraneous* Engliſh *Foſſils.* Nº *h.* 24. *& ſeq.*

q. 1. A Stone of a very dark brown Colour, 6 Foot ½ in length, of a roundiſh Figure, but ſomewhat flat, being 4 Inches in breadth, and 2 in Perpendicular. It is not ſtreight, but undulated or flexuous, and with large Flexus, there being but one entire and part of another in this whole Length. It riſes into Tubercles over the greateſt part of its Surface. 'Tis broken into 10 pieces, and was originally longer, the reſt being not to be got out of the Stone of the Stratum in which it lay. There are alſo two pieces more, but flatter and broader than theſe: and likewiſe two pieces of that Stone in which this Body lay. From a Quarry at *Haigh, Lancaſhire.*

q. 2. A Cylindric Body three Inches in length: and half as much in Diameter. 'Tis of a ferruginous Colour, ſtriated longways, and ſurrounded with ſix circular Sulci, placed at near equal Diſtances from each other. Found looſe on St. *Vincent*'s Rock near *Briſtol.*

q. 3. Another Body, of like figure, but thicker: and compos'd of a braſſy ſhining Pyrites. From the *Canal* Coal-pits at *Haigh, Lancaſhire.*

q. 4. Another Pyrites, not ſo thick, nor ſo round, appearing as ſomewhat compreſs'd. Out of the ſame Coal-pits.

q. 5. A long Body round and ſtriated. This is made up of a pale brown gritty Stone with very ſmall Sparks of Micæ amongſt it. From a Stone-pit, near *Haigh, Lancaſhire.*

q. 6. Another of a darker brown Colour and a more flat or compreſſed Figure. From another Stone-pit, near *Haigh.* There appear on ſeveral parts of the Surface of this, and the two following, Flakes of a Matter that is black, gloſſy, and much reſembling Pitch; but they are only Remains of a Skin or Cortex with which theſe Bodies have been apparently entirely inveſted, tho' now broken and ſhook off.

q. 7, 8. Two pieces of another of the ſame ſort and from the ſame Pit.

q. 9. Another leſs, but rounder. From another Pit near the ſame Town.

q. 9^{x}. A Segment of a Body 7 Inches long and 3 in Diameter, a little flat and tapering, with Striæ very thick, running parallel to the length of it, and 4 annular Striæ ſurrounding it. Theſe Annuli reſemble Joints of the Stem of ſome Plant of the Cane-kind: and the Body appears like part of the Stem of ſome Plant, tho' it be compoſed of a coarſe gritty brown Stone, with Micæ in it, of the very ſame ſort with the Stone of the Quarry in which it lay. *Whitehaven, Cumberland.*

q. 10, 11, 12. Three others, leſs, and flatter. From a Stone-pit, near *Haigh, Lancaſhire.*

q. 13. From the ſame Pit with *q.* 7, 8.

q. 14. Part of another, with a piece of the Stone in which it was lodg'd. From a Coal-pit near *Haigh, Lancaſhire.*

q. 14 ☉. Another, found, in Shiver, lying over the Coal, at *Lanelthy, Wales.*

q. 14^{x}. Another, leſs, but rounder. Out of a Quarry near *Whitehaven, Cumberland.*

q. 14*. Another, with part of the Stone in which 'twas lodg'd. Found near *Whitehaven,* in the ſame Quarry with *q.* 9^{x}. *ſupra.*

q. 14†. Another, found in a Stratum of Stone of another Quarry near *Whitehaven.*

q. 14‡. Another. A Body in Figure approaching a Cylinder, only ſomewhat compreſs'd; being 1 Inch $\frac{1}{4}$ Diameter one Way, and only 1 Inch the other. 'Tis ſtriated lengthways, and ſurrounded with a Ring, croſſing thoſe Striæ after the manner of a Joint. The Body was originally 2 Foot long: and had ſeveral like Joints, each about 2 Inches diſtant from other. Found in a Stratum of gritty Stone **, near *Aſhover* in *Scarſdale, Derbyſhire.* 'Tis remarkable that ſeveral of the Bodies in this Claſs, tho' found in Places ſo diſtant from each other, are, beſides their exterior Figure, compoſed of much the ſame ſort of Matter; which is a brown gritty Stone, with ſmall Spangles of a white ſilvery Talc in it.

q. 14 ♁. Found above the Coal in the Coal-pits of *Houghton le Spring*, in the Biſhoprick of *Durham.*

q. 14 ·※· Out of the ſame Coal-pit.

q. 14⸸. Out of ſtill the ſame Coal-Pit.

q. 15. A grey Stone, flat; ſulcated with parallel Furrows long-ways of it. From a Quarry near *Haigh, Lancaſhire.*

** *See a Sample of it in the Catalogue of Addit.* Engliſh *Foſſils.* b. 2.

q. 16. Another, that was contiguous to the former; and tallies with it.

q. 16 ˣ. Another, the Surface not quite ſo plain, but ſomewhat rounded; with Remains of a black, ſhining, thin Cortex; with which the whole Surface, ſeems to have been cover'd. *Lanelthy-Coaleryes, Wales.*

q. 17. An Iron Stone; black, flat, and wrought over one Surface very finely, with a ſtrange cancellated Work. Mr. *Chetwyn, Staffordſhire.*

q. 17ˣ. A pale brown Stone, with ſmall Micæ of Talc in it, and a cancellated Work upon it; not much different from that of the foregoing, *q.* 17. This was found in the ſide of a deep Way on *Boulton-Moor, Yorkſhire.*

q. 18. A Piece of grey Stone, having ſomewhat like a Cancellated, or Net-work upon it; but ſmaller and finer. From a Quarry in *Haigh, Lancaſhire.*

q. 19. Another with like Work upon it. This was Part of the former, till broke off from it.

q. 20. A Piece of grey Stone, with a black Film upon it, pretty thick ſet with ſmall Studs, rank'd in a kind of Quincunx Order; and two larger, appearing in manner of Breaſts, each having a Cavity in the middle of it. From the ſame Quarry with the foregoing.

q. 21. A Piece ſtruck off the former, bearing the Impreſſions of it, and tallying with it.

q. 22. Another Piece, the Surface riſing into Rhomboid Studs, placed in a Quincunx Order. From a Stone-pit, near the former. I have ſeen Fruits of the Fir-kind, from our *Weſt-India* Plantations, that this Body nearly reſembles.

q. 23. A Piece ſtruck off the precedent, and tallying with it.

q. 24. A black Flint, cover'd with a thin grey Cruſt. 'Tis broken, and within there appear ſeveral oblong Protuberances, ſtanding pretty regularly in a Quincunx Order: There are 7 or 8 of them in a Line, and 8 or 9 Lines. They ſtand all upon the ſame Plane, which riſes and ſwells up a little in the Middle, and ſeems to extend further into the Body of the Flint. The Protuberances, are grey; the Plane, or Ground on which they ſtand, whitiſh: They are near as big as a Grain of Barley; and thoſe of the ſame Row are placed at about $\frac{1}{12}$ of an Inch diſtant from one another. There ſeems to have been ſome extraneous Body incloſed in the Flint to which this Signature is probably owing; but what that is, whether the Skin of ſome Fiſh, or what elſe, I have not yet been able to diſcover. 'Twas found in the Road betwixt *Greenhithe* and *Northfleet, Kent.* The Studs appear manifeſtly to have been broken; and thoſe of one Plate tally, and have been continuous with thoſe of the other.

q. 25. A Piece of Chalk, having one Surface flat, of a brown Colour, with ſmall Cavities ranked in near a Quincunx Order upon it: In the midſt of each Cavity is a Tubercle, or Stud. This was from *Greenhithe, Kent.*

q. 26. Another from the ſame Place. Part of the Surface of this riſes into ſmaller Studs, and is without any Cavities.

q. 27, 28. A Piece of Chalk, ſplit in two. The Surface of one riſing into large round Tubercles, ſtanding cloſe to one another; and that of the other, having Cavities anſwering them. From *Northfleet* in *Kent.*

q. 29. A brown Stone, having in it many Silvery *Micæ*, or Talky Sparks. On one Surface of it are Cavities, placed in a Quincunx Order; in each whereof, ſtands a Papilla, with a ſmall Cavity in the middle of it. Found on the ſide of a Hill near the River, by *Sherborn, Glouceſterſhire.* See what I have noted concerning the Origin of theſe Bodies [*q.* 29, 30, 30 ˣ.] in the Catalogue of the additional extraneous *Engliſh* Foſſils, N° *h.* 31. *& ſeq.*

q. 30. Another, with like Cavities and Papillæ upon it. *Enſum, Oxfordſhire.*

q. 30 ˣ. Another, found in a Gravel-pit near *Cambridge.*

q. 31. A grey Spar, with ſhallow round Cavities on one Surface of it. Part of the Intervals are plain; the reſt wrought, with a kind of Net-work. From the great Limeſtone-pit, near *Dudly, Staffordſhire.*

q. 32. A *Quincunx*, or *Reticulum*, on a grey Stone. Found in the Highway, near *Haigh, Lancaſhire.*

q. 33. Found together with the former.

q. 34. A *Faſciculus* of Bodies, round, about $\frac{1}{6}$ of an Inch in Diameter, hollow, and parted into numerous Cells by means of Diaphragms, thick ſet throughout the whole Length of the Body. Some of theſe Bodies are ſub-divided, or branched. As I remember, the Twigs of the Walnut-Tree are of this very Conſtitution. This was found in a Gravel-pit near *Farrington* in *Berkſhire*, and given me by Mr. *Stoneſtreet*; who ſays, 'tis the ſame with that which Mr. *Lhwyd* calls *Alcyonium Foſſile pertuſum rubiginoſum.* Lythophyl. p. 6. N° 99.

q. 34 ˣ. Another like Body. *Witney, Oxfordſhire.*

q. 35. A Piece of Stone, Part of a dark ferruginous Colour, appearing to hold Iron: the reſt of a dark grey. This laſt is compoſed of Flakes, that part from each other without much difficulty, and are placed edgeways, and parallel to each other: They are thick ſet with undulated Lines running a-croſs them on both ſides each Flake. The Body appears to have been a Nodule, and the Iron-Stone to have been the Center; the Flakes ariſing from it, and tending all round to the Surface, which is of a dusky yellow Colour. Found in a Brook near the River *Duglas*, in *Lancaſhire.*

q. 36. A plumoſe ſtoney Spar, that lies next the Iron-Stone got here. On *Hunwich-Moor*, near *Biſhop's-Aukland*, Biſhoprick of *Durham.*

CLAS-

CLASSIS XIV.

Cochleæ Terreſtres ex Telluris Viſceribus erutæ.

[A] *r.* 1. Two Snail-Shells, found, amongſt ſeveral others, in grey Marl, about 10 Foot deep, in a Field near the Church, at *Northleach, Glouceſterſhire.* They are of that ſort that Dr. *Liſter* exhibits, *Hiſt. Conchyl.* N° 54. and are found at this Day living in moſt Parts of *England.*

CLASSIS XV.

Muſculi fluviatiles ex Telluris Viſceribus eruti.

There are frequently found a ſort of Muſcle in the Allum-Mines at *Whitby* in *Yorkſhire.* Several of them are exhibited, N° *f.* 567, to *f.* 571. *ſupra.* They are very like one ſort of the *Engliſh* River Muſcles.

Of the Cochlea faſciata vivipara fluviatilis. *Conf.* N° p. 57. *ſupra.*

[A] *ſ.* 1. This is a common *Engliſh* Muſcle; and is exhibited by Dr. *Liſter*, Hiſt. Conchyl. L. 2. N° xi. under the Title of *Muſculus latus maximus & tenuiſſimus è cæruleo virideſcens fere paluſtris.* 'Twas dug up in a Marl-pit, at *Hunton*, in *Kent*, along with ſeveral Sea-ſhells, mention'd *Philoſoph. Tranſ.* N° 155. and ſent me by Dr. *Hatley.* I wrote to him to know whether he was poſitive it was dug up there. And by Letter, *January* 20, 170$\frac{2}{3}$. he aſſures me it was *dug up with the reſt, upon his certain Knowledge.*

APPENDIX.

Various Bodies, recent, and of modern Growth, ſerving to match and compare with, or ſome other way to explain and illuſtrate the Antediluvian; digg'd out of the Earth, and preſerv'd in my Collections, chiefly of extraneous Foſſils.

PREFACE.

From the Time that I began firſt to collect and make Obſervations upon the Shells, and other adventitious Bodies, that are digg'd up at Land, I took great pains carefully to compare them with thoſe at this day produced at Sea: and to preſerve all ſuch of theſe latter, as match'd the Foſſil ones. They are amongſt the reſt of my Collection of Sea-Shells, Engliſh *and Foreign: and there are beſides, in my Repoſitory, various Jaws of Sharks, and other Sea-Fiſhes, having the Teeth in them, that exactly match theſe found in the Earth: and ſerve to demonſtrate that theſe likewiſe are genuine, and the real Teeth of once living Fiſh.*

In like manner there are, in my Collection of dry'd Plants, many that match thoſe incloſ'd in Stone; particularly of the moſt common, the Fern-kind; of which I dry'd and preſerved many Samples collected about the End of May, *the Time that the Deluge,* *coming on, put a ſtop to the Growth of the Vegetables then in being*[*]; *ſome Remains of which we now find incloſ'd in Stone. My Deſign was to ſhew the Agreement of the Vegetables growing in that Seaſon, now, in our Times, with thoſe ſo found lodg'd in the Earth; as to their Growth, Condition, Conſtitution, and all other Reſpects: and any one who ſhall, as I have done, make an accurate Collection of them, will find thoſe and theſe perfectly alike, allowance being made for the Change that ſome of the Foſſil, particularly the Leaves, have undergone, either during the Time that they were ſuſtain'd in the Water of the Deluge, or ſince they have been repoſited, for ſo many thouſands of Years, in the Earth. I am moſt inclinable to believe, that the greater of the Leaves underwent the Change, they now ſhew, in the Deluge; after the manner of ſome other Bodies, of which an account is given above, in the Preface to the* Catalogue of the extraneous *Engliſh* Foſſils: *And this may ſerve to explain why the Leaves of the Fern-kind are, above all others, ſo frequent and obvious; ſome ſorts of Leaves being, doubtleſs, more ſuſceptible than others of ſuch Alteration, whereby they were fortify'd and ſtrengthen'd; without which, Bodies ſo tender, as Leaves of Plants are, would ſcarcely have endur'd and been preſerv'd, through ſo many Ages, down to our Times.*

As to the Bodies in this Appendix, *they are only a few, of ſuch as I judg'd proper to have at hand, and ready to ſhew to any one that might happen to have ſome Diſſatisfaction, or Doubt, of the Reality of the like Bodies digg'd up at Land. Which indeed moſt of the* Virtuoſi *had, when I firſt enter'd upon theſe Studies*[†]; *till the Bodies in my Collection convinc'd them, by giving ocular Proof of their true Origin and Conſtitution, and demonſtrating the Vanity of the late Speculations, and Notions, that theſe were not of Marine Extract, but mere Stones, and Natives of the Earth.*

APPENDIX.

The extraneous Foſſils, Shells, and the reſt, compar'd with thoſe produced at this Day.

1, 2. Two Cones that grew, together, on the ſame Branch of the *Pinus Sylv. Raij*, or *Scotch* Fir, in *Trinity-College* Walks, in *Cambridge*. They were gather'd in the beginning of *June* 1697[‡]. They are of different Years: and exactly match thoſe digg'd out of the *Peat-Marſhes, Cheſhire*. See the *Engliſh* Catalogue, *b.* 70,

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[*] Gen. vii. 11. Nat. Hiſt. Earth, Part 3. Sect. II. Conſect. 5. & Part 6. verſus Finem.

[†] Confer. Mr. *Ray*'s *Diſcourſes of the Deluge*, 8°. Lond. 1693. Pag. 127.

[‡] *The Deluge, which put an end to the Growth of theſe and all other Vegetables, came on near this Time,* viz. *towards the End of May.* Nat. Hiſt. Earth. Part 3. Sect. II. Conſect. 5.

& 71. The younger, being ſucculent and tender, is found in the Marſhes, commonly ſomewhat periſh'd and decay'd; this here, being kept dry, is well preſerv'd.

3,4. Two other like Cones, gather'd off the Tree in the Phyſick-Garden at *Chelſea*, 23 *June* 1711.

5. A Piece of Fir, with the Knots in a Quincunx Order. *Petworth, Suſſex*. This Order is obſerv'd in many Plants, and particularly the Foſſil. See *The Catalogue of the additional, extraneous* Engliſh *Foſſils, h.*29. *& ſeq.*

6. *Pinus domeſtica, vera*, with the Knots in a Quincunx Order.

7. A Piece of Spray Wood, ſhrunk, and crack'd in the charring, much in the manner of the *Ludus Helmontij*; and ſerving to illuſtrate what is deliver'd concerning the Origin of the Cracks in that Body, in the *Catalogue of the* Engliſh *native Foſſils*, ˣ *d.*40.

8, 9. Common Brick, broken into two Pieces, diſcovering, on the one, part of the Leaf of the *Filix fœmina vulg.* On the other, the Impreſſion of it, after the manner that the Leaves of Fern, and other Plants, are found, in breaking ſome kinds of ſlatey Stones. See the *Catalogue of the* Engliſh *extraneous Foſſils*, Claſs 1. There might be much better Impreſſions of Leaves taken in finer Clay, to be afterwards bak'd: and better ſtill in Plaiſter of *Paris*.

10. A Branch of a Stellar Porus, of the ſame Species with that dig'd up at *Harborow, Leiceſterſhire*; in the *Catalogue of the native* Engliſh *Foſſils, e.*12.

11. A Coralline Aſtroites, reſembling that Foſſil *Aſtroite*, in the *Catalogue of the* Engliſh *native Foſſils. e.*94. but having the ſtellar Cavities, on the Surface, ſomewhat deeper. Drawn up out of the Sea near - - - - - -

12. A Coralline Body, radiated, and ſtellated, the Stars prominent, and riſing into Points, or Apices, in manner of that Foſſil Coralloid Body in the *Catalogue of the native* Engliſh *Foſſils, e.*84.

13. A white Coralline Body, with parallel ſtellar Pores running through it. Found at *Pyrton-Paſſage*, on the *Severn*, and probably was part of ſome Coral flung out of Ships with Ballaſt. Given by Mr. *Edward Lhwyd*, who, in his *Lithophyl.* N° 160. p. 21. T. 2. takes this to be the *Millepora* of *Imperatus*, but erroneouſly. It may ſerve to confirm and illuſtrate what is deliver'd of the *Foſſil Coralloid Aſtroitæ, Catalogue of the* Engliſh *native Foſſils*, Claſs 5. Part 5.

14. A Coralline Body, compos'd of a *Faſciculus* of *Fiſtulæ*, or Pipes, in ſome Parts ſtellar, in others only ſtriated. 'Tis of a Conſtitution nearly approaching that of Spar. From the Coaſts of *Barbadoes*. This is the very ſame Species with that in the *Catalogue of the* Engliſh *native Foſſils, e.*113. only the Pores of that are larger.

15, 16. Two Coralline *Fungi*; from the Shores of *Guernſey*. They nearly reſemble the Coralline Bodies found in the Chalk-pits of *Kent, Eſſex*, &c. See *The Catalogue of the* Engliſh *native Foſſils*, e.49.

17. *An Retepora, S. Eſchara Marina Fer. Imperati?*

18. That call'd the *Coffin-Bone*, in the Hoof of a Horſe. There is one of theſe Bones, digg'd up at *Wirtemberg*, in the *Catalogue of the foreign extraneous Foſſils*, v.1.

19. Five Vertebres, of ſome kind of Fiſh, cohering, and join'd.

20. One ſingle Vertebre, of ſome Fiſh, found on the Shores near *Moncaſter, Cumberland.*

21. Another; found along with the former.

22. Another. 23, 24. Two others.

25. The boney Palate, of ſome ſort of Fiſh, probably related to the *Paſtinaca Marina*, of which there's an account given, by Dr. *Sloane*, *Philoſ.Tranſ.* N° 232. p. 674. This Palate was found on the Shores of *Barbadoes.* It conſiſts of numerous Parts, ſomewhat inflected, join'd to each other in manner of a Suture. 'Tis much worn in one place, by grinding of the Food, probably Shell-Fiſh, that the Creature eats. I have obſerv'd ſomething of like ſort, in boney Palates, found in the Chalk-pits of *Kent* and *Surrey*, deſcrib'd in the *Catalogue of the* Engliſh *extraneous Foſſils*, N° 100. *& ſeq.* Dr. *Sloane*, there, mentions Parts of the Tongue of the *Paſtinaca Marina*, digg'd up in *Maryland.* I have receiv'd ſeveral like Parts that were digg'd up, together with thoſe, and are deſcrib'd in the *Catalogue of the extraneous foreign Foſſils*, μ. 105 *&* 106. that, truſting too confidently to him, I took to be of the *Paſtinaca Marina.* But, upon a Review, I now rather judge them to be Parts of a Palate, of the Kind of this here deſcrib'd.

26. The under Jaw of the Drum-Fiſh; from *Virginia.* See *Joſſelyn's New-England Rarities*, p. 25. The ſingle Teeth of this Fiſh are ſometimes found in Stone-pits, along with thoſe of the *Lupus Marinus*; both paſſing under the Name of *Bufonitæ*, or *Toad-Stones.* See great Variety of theſe in the *Catalogue of the extraneous* Engliſh *Foſſils*, Claſs 10.

27. This was ſent me for the lower Jaw of the *Lupus Piſcis*, or Sea-Wolf. Teeth of theſe ſorts are common in the Quarries of *Oxfordſhire* and *Northamptonſhire.* See the juſt now cited *Catalogue*, Claſs 10.

28. Teeth, out of another like Jaw.

29, 30, 31, 32, 33, 34, 35, 36, 37. Several like Jaws, ſent by *Agoſt. Scilla.* Some of them he has grav'd, Tab. 2. of his *Lettera circa i Corpi Marini, petreficati.* 4°.

38, 39, 40. Sent by *Agoſt. Scilla.* The Teeth in theſe Jaws are not unlike thoſe call'd by Mr. *Lhwyd Plectronitæ*, but are leſs.

41. Fiſhes Teeth, ſome like the *Plectronitæ*; others of the Wolf-Fiſh. Sent by *Agoſt. Scilla.*

42. Part of the Jaw of a young Shark, thick ſet with ſmall Teeth. Taken on the Coaſts, near *Minehead, Somerſetſhire.*

43. Part of the Jaw of a Shark, or Dog-Fiſh. Sent by *Agoſt. Scilla.*

44.

44. Teeth of various Kinds of Sharks, or Dog-Fiſh. Sent by *Agoſt. Scilla.* See his *Lettera circa i Corpi Marini, petreficati,* Tab. 1, 3, 6, 7, 14, 28.

45. Other Teeth of Sharks, taken, I think, on the Coaſts of *England.*

46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56. Part of a Jaw of the *Peſce Vacca,* and ſeveral ſeparate Teeth; ſent by *Agoſt. Scilla.* See his *Lettera circa i Corpi Marini, petreficati.* Tab. 1, 4, & 27.

57. An *Echinus Ovarius,* from Sea, very fair. There are of this ſort digg'd up in *England,* in the Chalk-pits at *Greenhithe, Purfleet, Croydon,* and in the Quarries of *Clipſton,* in *Northamptonſhire,* and elſewhere. See *The Catalogue of the* Engliſh *extraneous Foſſils, h.* 207, to 210. There are of the ſame digg'd up at *Meſſina, Malta,* and other Parts abroad. See *The Catalogue of the extraneous foreign Foſſils,* ζ. 65. & *ſeq.*

58. Another Species of *Echinus Ovarius*; found on the Iſle of *Sheppey, Kent.*

59. Another, exhibiting the Teeth, very fair. This Kind is found on the Coaſts of *Jamaica, Barbadoes,* and other Parts of the *Weſt-Indies.*

60. Great Variety of the Teeth of the *Echini Ovarij*; taken out of ſeveral of the Shells.

61. *Aculei,* or Spikes of the *Echinus Ovarius*; ſent by *Agoſt. Scilla.* See his *Lettera circa i Corpi Marini, petreficati,* Tab. xxii. There are of this Sort found in the Chalk-pits in *England.* See the Catalogue of the *Engliſh* extraneous Foſſils. *h.* 224.

62. Three ſhort Spikes, of an *Echinus Ovarius,* found on the Shores of *Barbadoes.* There are of this Sort found commonly in the Chalk-pits and Quarries in *England.* See the Catalogue of the extraneous *Engliſh* Foſſils. *h.* 217, 218. 223. & *ſeq.*

63. Another, larger, from Sea.

64. Another, out of the *Sinus Perſicus,* or *Red-Sea.*

65. Another, near 4 Inches long, likewiſe from the *Red-Sea.*

66. An *Echinus Spatagus.* This Kind is found commonly on the Weſtern Coaſts of *England, Wales,* and the *Iſle of Man.*

67. Another, younger, and leſs; but of the ſame Species.

68. Another, of a different Species.

69. Another, very large, *Weſt-Indies.* There is one of this Species, ſomewhat leſs, ſent by *Agoſt. Scilla.* See his Book, Tab. 10. Fig. 3. and the *Catalogue of the extraneous foreign Foſſils,* ζ. 42.

70. Another Species, flat, and thin. It ſeems to be the ſame Species with that dig'd up at *Maryland* in the *Catalogue of Foreign extraneous Foſſils.* ζ. 57.

71. Two *Opercula,* commonly called *Umbilici Marini.* Sent by *Agoſt. Scilla.* He found of theſe, in the Earth, near the City of *Milazzo.* See the *Catalogue of the extraneous foreign Foſſils,* γ. 116. The Tops of theſe are hollow'd.

72. Two others, with the Tops convex. Sent likewiſe by *Agoſt. Scilla.*

73. Tubular Shells, of the *Vermiculi Marini*, of ſeveral Sizes. See, in the *Catalogue of extraneous* Engliſh *Foſſils*, Claſſis 1. Part 1. Sect. 1. ſeveral digg'd up at Land.

74. Six ſmall *Dentalia*, of which two are ſtriated, the reſt plain. Sent from *Sicily* by *Agoſt. Scilla.* See his Book, Tab. 18. Fig. 6, 7, 8. There are ſeveral in the *Engliſh extraneous Catal.* Claſs 1. Part 11. Sect. 2. and amongſt the *Hampſhire* Foſſils, N° 21.

75. The common *Nautilus*, or *Nautilus Græcorum*, figur'd by Dr. *Liſter*, Tab. 551. This is broke, ſo as to ſhew the inward Fabrick of it, and the Partitions. 'Tis commonly digg'd up at Land. See the *Catalogue of the* Engliſh *extraneous Foſſils*, *d.* 1. *& ſeq.*

76. *Nautilus, exiguus, albus, pellucidus, teres, Liſt. Hiſt. Conchyl.* Sect. 4. c. 1. N° 2. From *Barbadoes.* This is the only Sea-Shell, yet diſcover'd, of the *Ammonites* kind: and is commonly found on the Coaſt of *Jamaica*, and the *Bahamas.* There are ſome of this Genus, among the Freſh-Water Shells, figur'd by Dr. *Liſter*, *Hiſt. Conchyl.* Lib. 2. Sect. 3. But none of them are divided into Cells, by Diaphragms, which the greateſt part of the Foſſil are.

77. *Nautilus, vacuus, ſ. non tabulatus, ſtriis paucioribus diſtinctus. Liſteri Hiſt. Conchyl.* L. 4. c. 2. There is a Species, not very unlike this, in the *Catalogue of the extraneous* Engliſh *Foſſils*, *d.* 21, 22.

78. *Trochus planior, undatim ex rubro radiatus, Liſt. Hiſt. Conchyl.* Lib. 4. Sect. - - - N° 35. *Marget*, on the Coaſts of *Kent.*

79. *Buccinum bilingue ſtriatum, labro propatulo digitato, Liſt. Hiſt. Conchyl.* L. 4. Sect. 12. N° 20. See the *Catalogue of the extraneous* Engliſh *Foſſils*, *e.* 138, 139. Shores of the *Biſhoprick of Durham.*

80. *Cochlea Clavicula productiore.* Shores near *Scarborough.* There are in the *Catalogue of the extraneous* Engliſh *Foſſils*, *e.* 75. four of this Species, digg'd up in a Marl-pit, near *Wiggan, Lancaſhire.*

81. The *Pecten maximus, Liſteri Hiſt. Animal. Angliæ*, p. 184. or Scallop-Shell. This was ſent by *Agoſt. Scilla.* If it be amongſt the Things grav'd in his Book, it muſt be that Tab. 15. It appears recent, as if found on the Shores, and not as if digg'd up at Land; tho' he ſent it with the Foſſil Shells.

82. A Pair of Scallops, *Engliſh.* 'Tis of the ſame Kind with thoſe digg'd up in *England*, in the *Catalogue of the* Engliſh *extraneous Foſſils*, *f.* 37. *& ſeq.* We have commonly of the ſame Kind, or very near, from *Barbadoes.*

83. A Scallop, exactly like that in the *Catalogue of the* Engliſh *extraneous Foſſils*, *f.* 37^{x}. This was found on the Shores of *England.*

84. Another, *Engliſh*, of the ſame Kind with thoſe in the *Catalogue of the* Engliſh *extraneous Foſſils*, *f.* 90. *& ſeq.*

85. Tree-Oyſters; from the *Mangrove-Trees*, on the Shores of *Jamaica.* There are found Shells, not unlike theſe, in the Quar-

ties of *Oxfordſhire, Glouceſterſhire,* and *Northamptonſhire.* See the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 149. *& ſeq.*

86. *Oſtrea Arborea Marginibus dentatis.* From the Shores of *Barbadoes.* There are digg'd up, in ſeveral Parts of *England,* Shells of this Kind, or nearly related to it. See the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 172. *& ſeq.*

87. One of the *Leptopolyginglimi*; from *Barbadoes.* There are of the ſame Species found on the Shores of *England*; and alſo digg'd up at Land, See the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 418. *& ſeq.*

88. Another of the *Leptopolyginglimi*; found on the Shores near *Plymouth.* This is exactly like that in the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 419.

89. *Pectunculus maximus, ſubfuſcus, valde gravis. Liſteri Hiſt. Conchyl.* N° 108. Found near the Mouth of the River *Tees,* on the Shores of *Yorkſhire.* This Species is commonly digg'd up at *Richmond,* in *Surrey.* See the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 433. *& ſeq.*

90. A Pair of *Pectunculi,* from *New-England*; where they are called *Clams.* This Species, or one very like it, is digg'd up commonly in *England.* See the *Catalogue of the* Engliſh *extraneous Foſſils, f.* 447. *& ſeq.*

91. A Pair, leſs, from *Barbadoes.*

92. A Pair of *Pectunculi faſciati*; from *Jamaica.* I have ſeen of the ſame ſort from *Barbadoes:* and there are of the very ſame digg'd up in *England.* See the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 480.

93. Another, leſſer. *Barbadoes.* This is little, if at all, different from thoſe in the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 482. *& ſeq.*

94. A *Pectunculus,* faſciated, and ſtriated. *Barbadoes.*

95. *Pectunculus albus admodum craſſus, ſinu, ſive ſulco, conſpicuus.* Liſter. Hiſt. Conchyl. N° 138. From *Barbadoes.*

96. Another, leſs; from *Barbadoes.*

97. The common Cockle of Dr. *Liſter, Hiſt. Conchyl.* N° 171. There are of this ſort digg'd up in ſeveral Parts of *England.* See the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 562. *& ſeq.*

98. A *Pectunculus Leptopolyginglimus, forma oblonga.* From *New-England.*

99. A *Cuneus,* from *Barbadoes.* This has a Hole bored through it by the *Purpura.* See the *Preface* to the *Catalogue of the* Hampſhire *Foſſils:* and the *Catalogue of the foreign extraneous Foſſils.* 𝔅. 121.

100. Another, from *Barbadoes.* This Species is alſo found on the Coaſt of *England*; and likewiſe digg'd up at Land, in various Places. See the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 594. *& ſeq.*

101. Another, alſo from *Barbadoes.* This ſeems to be of the ſame Species with them digg'd up near *Woolwich,* in the *Catalogue of the extraneous* Engliſh *Foſſils, f.* 587.

102. A Pair, *Engliſh*. There is, ſomewhere, in my *Engliſh Collection of extraneous Foſſils*, a Shell of the ſame Kind.

103. The *Mytulus*, or common *Engliſh* Sea-Muſcle, with *Balani*, and the *Retepora* upon it. *Muſculus ex cæruleo niger, Liſteri Hiſt. Conchyl. Angliæ*, p. 182. This Kind is frequently digg'd up in *England*. See *The Catalogue of the extraneous* Engliſh *Foſſils*, *f.* 658. *& ſeq.*

104. Shells, found on the Shores near *Minſter, Sheppey-Iſland*, worn, and plain'd, by the Agitation of the Sea by Tides and Winds. This may ſerve to illuſtrate what is ſet forth in the *Catalogue of the extraneous* Engliſh *Foſſils*, Mantiſſa 3. Sect. 1.

105. An Oyſter-Shell, with numerous Perforations made by Worms. Found on the Shores near ------- *Suſſex*. This may ſerve to illuſtrate what is ſet forth in the *Catalogue of the extraneous* Engliſh *Foſſils*, Mantiſſa 3. Sect. 2.

106. An Impreſſion, in Sealing-Wax, of the *Ammonitæ*, in the *Catalogue of the extraneous* Engliſh *Foſſils*, *d*. 99.

107. An Impreſſion of a *Concha Anomia ſulcata*, in the *Catalogue of the extraneous* Engliſh *Foſſils*, *f*. 337 ^{d}. taken off in Sealing-Wax.

108. An Impreſſion of a *Lapis Judaicus*, or tumid *Aculeus* of an *Echinus Ovarius*, in a greyiſh Flint; in the *Catalogue of the extraneous* Engliſh *Foſſils*, *h*. 250. Taken off in red Sealing-Wax.

109. An Impreſſion of that in Flint. *Ibid. h*. 251.

110. Lead, caſt in a turbinated Shell, I think, that of Dr. *Liſter*, *Hiſt. Animal. Angl.* Tab. 3. Fig. 1. This, and the following were caſt with deſign to ſhew the Manner of the Formation of the *Cochlitæ, Conchitæ*, &c. in the Shells at the Deluge.

111. Another like leaden Caſt, I think, in the Shell, Fig. 2. *Ibid.*

112. Another. 113. Another. 114. Another. 115. Another.
116. Another.

117. Lead, caſt in the *Pectunculus maximus*, of the ſame Species with N° 89. *ſupra*.

118. Lead, caſt in an *Echinus Spatagus*, of the ſame Species with thoſe in the *Catalogue of the extraneous* Engliſh *Foſſils*, *h*. 9. *& ſeq.*

119. Lead, caſt in an *Echinus Galeatus*, of the ſame Species with thoſe in the *Catalogue of the extraneous* Engliſh *Foſſils*, *h*. 62 *& ſeq.*